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ORIGINAL LECTURES.

THE CARTWRIGHT LECTURES.

ON THE GENERAL PATHOLOGY OF FEVER.

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LECTURE III.

THE ETIOLOGY OF FEVER.

(Concluded from page 544.)

We come now to the third and most important group of fever-producing agents, the pathogenic microörganisms. So overshadowing is their importance that it has been claimed that they are the sole causes of fever. In contrast with former times it is no longer the symptomatic fevers whose etiology is clearest. We have much more definite ideas as to the mode of production of some of the essential fevers which were once the most obscure, than we have of symptomatic fevers. It does not seem to me worth while to go over the chain of evidence which establishes the doctrine that the infectious fevers are caused by microörganisms. There is probably no one who has thoroughly investigated the subject, and is competent to form an opinion on it, who does not to-day admit that a number of infectious diseases have been proven to depend upon specific microörganisms, and that it is a logical inference that all infectious diseases are caused by parasitic organisms.

It is not germane to our subject to enter into a morphological or biological description of the different species of pathogenic organisms which are causes of febrile diseases. The only question which concerns us in this consideration of the general etiology of fever is how the microörganisms produce fever. Are they themselves the pyrogenic agents, or do they produce chemical substances which are pyrogenic? A number of other possibilities might be mentioned These and similar questions have suggested themselves to investigators since the beginning of any knowledge of parasitic microorganisms. Our information is far from sufficient to enable us to answer these questions in a positive manner, and still we are not left wholly to vague surmises in attempting to form some sort of an opinion.

That bacteria can produce mechanical effects by plugging up capillaries and in other ways is certain, but the wide differences presented by the various infectious diseases cannot be reconciled with the idea that pathogenic bacteria act chiefly by mere mechanical interference with the fluid and the solid constituents of the body. Notwithstanding the fact that Stricker and Albert succeeded in producing fever by the injection of starch granules into the blood, probably no one will be inclined to attribute the pyrogenic activity of bacteria in any considerable extent to occlusion of bloodvessels.

In a certain number of infectious diseases, particularly of animals, bacteria are present in such enormous number in the blood and tissues that some are inclined to refer the disastrous effects of the organisms to the withdrawal of oxygen and other nutritive pabulum from the cells of the body. So far as the appropriation of oxygen is concerned, this idea is not supported by the results of most of the examinations of the blood in cases of anthrax. This explanation was more popular in the early days of bacteriology than it is at present, and at the best its value is limited, for it cannot be applied to a large number of infectious diseases, such as cholera or typhoid fever where the circulating blood is not largely invaded by the parasites. Furthermore, it is not clear how the appropriation by bacteria of nutriment intended for the tissues would help us to explain the production of fever.

It has been suggested that the increased temperature in infectious fevers may be explained by the heat produced by oxidation or other chemical changes in the microörganisms themselves. But this is not at all a satisfactory explanation. Not only is the quantity of heat which can come from this source in all probability very small compared with that constantly produced in the body, but such an explanation of febrile rise of temperature is not in harmony with what we know concerning the mode of production of fever (see Lecture I.).

The failure to explain the pathogenic power of bacteria in these and similar ways led to the supposition that the morbid activity of pathogenic bacteria is exerted chiefly by means of injurious chemical products. The demonstration of such products leaves no room for doubt as to the correctness of this supposition for some infectious diseases. This explanation is probable for most such diseases, but experience has shown that it is particularly dangerous to indulge in hasty generalizations in this department of medical science.

Sterilized and filtered cultures, particularly old cultures, of various pathogenic bacteria are capable of producing fever and other symptoms when injected into the blood or tissues. This, of course, makes it evident that the bacteria in question give rise to poisonous substances. It is necessary to distinguish between the intoxication produced by the injurious products of bacteria and the infection caused by multiplication of the microörganisms within the body. That this distinction may be readily overlooked is shown by the recent experiments with the inoculation into animals of pure cultures of the typhoid bacillus. Small quantities of these cultures may be inoculated without any apparent effect; if, however, larger quantities are injected into the veins or the peritoneal cavity of a rabbit, the animal dies in a short time

and the characteristic bacilli are found in the blood, spleen, and elsewhere. It was supposed by Fränkel and Simmonds,[1] to whom we owe this latter observation, that actual infection took place, but it has been demonstrated by Sirotinin and by Beumer and Peiper[2] that under these circumstances no multiplication of the injected bacilli occurs, and that the same results may be obtained by the injection of sterilized typhoid cultures.

The isolation in a chemically pure state of the poisonous products of pathogenic bacteria encounters great difficulties, and we owe to Brieger[3] nearly all that has been accomplished in this direction. Two substances which he has obtained from cultures of pathogenic bacteria are of great interest. Brieger isolated from pure cultures of the typhoid bacillus a very poisonous ptomaine or toxine, as he prefers to call this group of substances. He has given to it the name typhotoxine. It may be somewhat significant that he failed to find typhotoxine in a culture which had stood for twenty-four hours at a temperature of 102.2° F. (39° C.). The injection of typhotoxine into guinea-pigs produced great muscular weakness, diarrhœa, increased frequency of pulse and of respiration, and death. Nothing is said as to the effect upon the temperature of the animal.

A toxine has been isolated by Brieger in a crystalline form from an impure culture of the tetanus bacillus. This substance, called tetanin, produces, when injected into animals, the characteristic symptoms of tetanus.

It is evident that these important discoveries render far more definite than was formerly possible, the belief that bacteria produce fever by means of their chemical products.

A dangerous influence exerted by poisonous ptomaines is that under their agency the power of the body of resisting the invasion of various microörganisms may be impaired or overcome. Thus, Wyssokowitsch has shown that the immunity of some animals against certain species of bacteria may be destroyed by ptomaine poisoning.

In order to observe the effects upon the temperature, I have injected into rabbits sterilized cultures of the typhoid bacillus. Injections of very small quantities of these cultures produce no effects, somewhat larger amounts cause a rise of temperature without other marked symptoms, still larger quantities produce increased temperature, diarrhœa, weakness, and other manifest symptoms of severe illness, but the animal may recover; relatively large amounts are followed by fall of temperature, grave illness, and death. I have also obtained results similar to those of Sirotinin, who inoculated two rabbits with the same amount of a typhoid culture. In one rabbit fever developed and the animal recovered; in the other, the temperature fell after the injection, and the animal died. This certainly does not indicate that the rise of temperature in itself is an unwelcome attendant of intoxication with the poisonous products of bacteria. My experiments certainly showed that the animals were more likely to die after injection of typhoid cultures when the temperature fell than when it rose, independently of the quantity of material injected. One is reminded here of the very malignant cases of typhoid fever reported by Fräntzel, and others, in which the temperature throughout a great part of the disease was subfebrile, or even at times subnormal.

In no disease is the dependence of the febrile paroxysm upon the presence of bacteria so apparent as in relapsing fever, where, according to the statements of most, although not of all, observers the spirilla appear in the blood at the beginning of a paroxysm and disappear at the end. Whether or not, here and in malaria, the pyrogenic agent is a chemical product of the microörganisms causing the disease, we do not know.

I must content myself with having brought before you evidence showing that at least in some of the infectious fevers the specific bacteria produce pyrogenic substances. We have no right to say that this is the only way in which pathogenic bacteria can cause fever.

We have considered now three groups of agents concerned in the production of fever, viz.: first, unorganized ferments and other relatively homologous substances; second, ptomaines and other chemical products of saprophytic microörganisms; third, pathogenic microörganisms and their chemical products.

It is not to be understood that these groups correspond to sharply defined classes of fever-producing agents. The same substance may be produced by the action of unorganized ferments, as well as by saprophytic bacteria or by parasitic bacteria; hence, we may find the same fever-producing agent in each of the three groups. As has already been mentioned, our knowledge does not justify us in regarding these various substances as the immediate and direct pyrogenic agents. The epithet pyrogenic is applied to them only by a certain latitude of signification. It is possible that these various substances, which we are in the habit of describing as pyrogenic, may produce in the body some common change which gives rise to the real fever-producing agent. This is the view of von Bergmann and Angerer, who believe that this common change is a liberation of fibrin ferment by destruction of leucocytes. While we cannot consider this view as more than an hypothesis, it is, nevertheless, well to remember that apparently heterogeneous substances, which are usually designated as pyrogenic, may produce similar changes which are to be regarded as the real source of the febrile disorder of animal heat. But, notwithstanding these limitations and these elements of uncertainty, it seems to me that some such classification as that suggested of the agents producing fever is more useful than that usually employed in the discussions of the etiology of symptomatic and of essential fevers.

There is one point which must be impressed upon every one who makes many experiments with pyrexial agents. This is, that once in a while a substance of undoubted pyrogenic power causes a fall instead of a rise of temperature. This occurs frequently when the substance is injected in large quantity and under these circumstances there is usually produced a condition of collapse. But in exceptional cases the same dose which will cause in one animal a rise of temperature may give rise in another animal of the same species to a distinct reduction of temperature. In these latter cases there must be some idiosyncrasy on the part of the animal. Aronsohn[1] refers this unusual phenomenon to some peculiarity of

[1] Fränkel and Simmonds: Die Ætiologische Bedeutung des Typhus-bacillus, Hamburg und Leipzig, 1886.

[2] Sirotinin: Zeitschrift f. Hygiene, Bd. I. 465.
Beumer u. Peiper: Ibid., p. 489.

[3] Brieger: Untersuchungen über Ptomaine, Berlin, 1886.

[1] Aronsohn: Deutsche med. Wochenschrift, 1888.

the heat centres in the brain, and he draws an interesting parallel between this contrary effect of pyrogenic substances and the exceptional cases in which antipyretic drugs give rise to elevation instead of lowering of temperature.

The causes of fever which we have thus far discussed, have been substances which exert a pyrogenic effect when introduced into the circulation. We suppose that these substances act in some way upon the nervous system, but whether or not this action is a primary one it is impossible to say. Even if we assume, as is often done, that these substances incite directly in the blood and tissues chemical changes which lead to increased production of heat, we must still have recourse to some action upon the nervous system, as has already been sufficiently set forth in the previous lectures.

It cannot be doubted that fever may be caused by other agencies than pyrogenic substances present in the blood or tissues. The effects of exposure to external heat have already been considered. We found experimental evidence in support of the view ably advocated by H. C. Wood, that in typical cases of thermic fever or sunstroke, the strain placed upon the heat-regulating centres by exposure to excessive heat results in paralysis of these centres with rapid elevation of the internal temperature.

The cause of the elevation of temperature in tetanus is not altogether clear. In this disease the temperature may vary but little from the normal, but it is not uncommon to find excessive elevations of temperature toward the termination. Temperatures of 113° F. (45° C.), or more, have been recorded. The idea would naturally suggest itself that the rise of temperature is due to the tetanic muscular spasms, which we know to be accompanied by production of heat. Leyden was led to adopt this explanation by the results of experiments made upon animals. He succeeded by producing violent tetanic contractions of the muscles of a dog, in raising the internal temperature in the course of one hour and a half from 103.3° F. (39.6° C.) to 112.6° F. (44.8° C.). Clinical observations, however, do not support the supposition that the hyperpyretic temperatures of tetanus are dependent upon the muscular contractions. In spite of violent and prolonged tetanic spasms, the internal temperature may remain normal or be but slightly elevated. There is a decided similarity between the hyperpyrexia of tetanus and that which occurs in rheumatism and some other diseases, particularly in affections of the central nervous system, and it certainly seems probable that in all of these cases there is a profound disturbance of the heat-regulating centres. As the elimination of urea in tetanus is not excessive, we find additional reason to separate tetanic hyperpyrexia from ordinary febrile conditions. Recent investigations of the etiology of tetanus, have rendered it certain that at least some forms of this disease are caused by infection with a special microorganism. This has been demonstrated not only in the tetanus of animals but also in that of human beings. The tetanus bacillus has been found wide-spread in the ground in Germany, and I find it abundant in the ground in Baltimore and its neighborhood. In experimental tetanus, the bacillus, which has not yet been obtained in perfectly pure cultures, develops chiefly in the tissues near the seat of inoculation, and does not invade other parts of the body and the blood to any great extent. This indicates that the symptoms are referable chiefly to poisoning by some chemical products of the specific microörganism. As has already been mentioned, this view is sustained by Brieger's discovery in cultures containing the tetanus bacillus of a peculiar ptomaine which he has called tetanin, and which produces tonic spasms of the muscles. It is, therefore, reasonable to believe that the hyperpyrexia of tetanus is caused by the action of poisonous products of the tetanus bacillus on the nervous centres concerned in temperature regulation. Our present knowledge, however, does not warrant us in asserting that all forms of tetanus in human beings are of an infectious nature.

In the first lecture of this course, evidence was presented to show that pyrexia may be caused by affections of the nervous system without the agency of any pyrogenic substance. It may jar upon the sensibilities of some to call this form of pyrexia fever; but this hesitation can be due only to the idea that symptoms which are referable to infection or intoxication are essential to the conception of fever. In my judgment, we shall be led into confusion if we attempt to incorporate into our definition of fever, more than properly belongs to the febrile disorder of animal heat, and from this point of view there can be no impropriety in designating as fever, the pyrexia dependent directly upon affections of the nervous system.

It is not necessary to repeat here the conclusive experimental evidence for the existence in the nervous system of centres or regions which control the dissipation of heat and the chemical processes concerned in the production of heat. Those who are not much impressed by experiments upon animals, can hardly fail to be convinced by the clinical evidence which demonstrates that lesions of the nervous system may cause elevation of temperature, which cannot be referred to the action of any pyrogenic substance. Such evidence must, of course, be collected from cases where the fever cannot be explained by inflammation, bed-sores, or other lesions which can give rise to absorption fever. W. Hale White,[1] in the interesting article already referred to, has collected a number of cases of tumor, hemorrhage, softening, sclerosis, injury and functional disturbance of the spinal cord and brain, in which the pyrexia or hyperpyrexia is to be explained only by the lesion of the nervous system. The number of such cases might be considerably increased. These cases show that lesions of the cervical part of the cord, of the pons, of the corpus striatum, and of the neighboring white matter, are most likely to be associated with high temperature, but the cases hitherto reported hardly justify positive statements as to the exact situation in man of thermically active nerves or regions in the brain and spinal cord. As might be expected, not only focal lesions, but also diffuse diseases such as occur in general paralysis of the insane, locomotor ataxia, multiple sclerosis may give rise to pyrexia which sometimes assumes the form of temperature crises. It is in harmony with what we know of other disorders of the nervous system, to find that not only demonstrable anatomical lesions, but also functional disturbances may produce nervous pyrexia. Such functional disturbance furnishes the most probable explanation of the singular

[1] W. Hale White: The Theory of a Heat Centre from a Clinical Point of View. Guy's Hospital Reports, vol. 42, 1884.

and erratic elevations of temperature which have been occasionally observed in hysteria.

A question which merits more consideration than it is possible to give to it on the present occasion, relates to the possibility of the occurrence of fever as a reflex neurosis. The advance in our knowledge of the etiology of traumatic and inflammatory fevers, has pushed aside almost wholly the old doctrine of irritative fever. There are, however, cases of fever where still the simplest, and apparently most rational, explanation of the causation, is peripheral nerve irritation. As examples may be mentioned, the fever resulting from teething in children, that sometimes accompanying the passage of gall-stones or urinary calculi, and that occasionally following the insertion of a catheter into the urethra. It must be admitted that the evidence on this point is not conclusive. Especially is there lack of satisfactory experimental evidence. Electrical irritation of the exposed sciatic nerve is, under ordinary circumstances, followed by a moderate fall of temperature, although Ott[1] finds that in atropinized cats such irritation is followed by a decided rise of temperature. But these experiments cannot be held to weigh for or against the doctrine of irritative fever. Observations on human beings indicate that peripheral nerve irritation, if ever a cause of fever, is so only in certain situations and under certain forms of stimulation, and in certain individuals. In infants temperature regulation is more labile than in adults, so that it may be that nerve irritation can more readily disturb the temperature in the former than in the latter. The chief controversy as to the question now before us, has been as to the explanation of certain forms of urethral or catheter fever. It cannot be doubted that a large number, probably most, of the cases of so-called urethral fever, are instances of genuine absorption fever. Even if we exclude all cases with diseased kidneys, or with cystitis or other inflammatory disease of the urinary passages, there remains a certain number of cases in which the gentle insertion of a disinfected catheter is followed by distinct febrile reaction. It seems unwarrantable to assume that in all of these cases the catheter has caused a laceration of the urethra through which pyrogenic substances are absorbed. What is the nature and whence the source of these substances? In the cases now under consideration, they can be sought only in the normal urine, and of their existence there no proof has been afforded. In these cases it is certainly very difficult to understand how the fever can be interpreted as due to the absorption of some pyrogenic agent, and failing this explanation, the idea that the fever is dependent upon nerve irritation is most plausible.

I have now presented to you an imperfect survey of the general etiology of fever. The attempt has been made to classify the leading causes of fever, but it cannot be claimed that every variety of fever can be assigned to one of these groups of causes. Our knowledge of the etiology of special fevers is still too imperfect to warrant any such generalization. This is an attractive field for much patient investigation. I need only remind you of the uncertainty which still pertains to the causation of many of the fevers of warm countries. There is reason to believe that there remain yet to be differentiated etiologically, specific types of fever which occur among us, and particularly in our Southern States. It may be, that increasing knowledge will necessitate the recognition of varieties of pyrogenic agents entirely distinct from any with which we are now familiar. It is certain that future investigations will add clearness and precision to our ideas of the nature and mode of action of causes of fever which, at the best, we can now understand only imperfectly.

I cannot conclude this course of lectures without saying a few words on a subject which must engage the attention of every one who gives much thought to the nature of fever. What is the significance of fever, is a question which thrusts itself upon us no less than it has upon physicians in all ages. Unfortunately, we cannot to-day, any more than could our predecessors, give other than a speculative answer to this question. There have been in all ages enlightened physicians who have held the opinion that fever is a process which aids in the elimination or destruction of injurious substances which gain access to the body. Under the influence of ideas which sought in increased temperature the origin of the grave symptoms of fever, we have in recent times in great part lost sight of the doctrine once prevalent, that there may be in fever a conservative element. There is much which speaks in favor of this doctrine. The real enemy in most fevers, is the noxious substance which invades the body, and there is nothing to prevent us from believing that fever is a weapon employed by nature to combat the assaults of this enemy. The doctrine of evolution indicates that a process which characterizes the reaction of all warm-blooded animals against the invasion of a host of harmful substances, has not been developed to so wide an extent, and is not retained with such pertinacity without subserving some useful purpose. This is a point of view from which many pathological processes can be regarded with advantage. Even suppuration, which one does not generally look upon as a beneficent provision, is a most important instrument of nature in forming a barrier against general infection of the body with certain microörganisms. It is impossible with our present knowledge, to say in exactly what way fever accomplishes a useful purpose. There are facts which suggest that in some cases of fever the increased temperature as such may impair the vitality or check the virulence of pathogenic microörganisms, but there are many circumstances which make it difficult to suppose that this is the agency by which fever usually exerts a favorable action.

The supposition seems to me more probable that the increased oxidation of fever aids in the destruction of injurious substances. According to this view, the fever-producing agents light the fire which consumes them. It is not incompatible with this conception of fever, to suppose that the fire may prove injurious also to the patient and may require the controlling hand of the physician. Time will not permit me to elaborate further the ideas here suggested. In the course of these lectures some facts have been presented and others might be drawn from clinical and experimental observations which favor the hypothesis that fever is in a certain sense a conservative process. Unproven and intangible as the hypothesis may seem to some, no apology is needed for bringing to your attention a conception of fever in favor of which much can be adduced, and which, if true, is of fundamental importance, both theoretically and practically.

[1] Ott: Therapeutic Gazette, August, 1887.

ORIGINAL ARTICLES.

RECTAL INSUFFLATION OF HYDROGEN GAS AS AN INFALLIBLE TEST IN THE DIAGNOSIS OF VISCERAL INJURY OF THE GASTRO-INTESTINAL CANAL IN PENETRATING WOUNDS OF THE ABDOMEN WITHOUT LAPAROTOMY.[1]

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THE operative treatment of penetrating wounds of the abdomen complicated by visceral injury of the gastro-intestinal canal is now sanctioned by the best surgical authorities and may be considered as a well-established procedure based, as it is, upon experimentation and clinical experience. A visceral wound of the stomach or any part of the intestinal canal sufficient in size to give rise to extravasation into the peritoneal cavity must be looked upon as a mortal injury, unless promptly treated by abdominal section. A number of well-authenticated cases are on record where a wound in the stomach, or large intestine, healed, and the patients recovered without the intervention of surgery, but these instances are so few that practically the force of the preceding statement remains unimpaired.

Visceral injury of the stomach or intestines rarely gives rise to symptoms upon which the surgeon could rely in making a positive diagnosis. In the treatment of penetrating wounds laparotomy is resorted to either for the purpose of, 1, arresting dangerous hemorrhage, or, 2, detection and treatment of a wound or wounds of its hollow viscera. The first indication is readily recognized, and the diagnosis not only justifies the operation, but imposes it as a stern duty upon the surgeon, from which he should never shrink. The recognition of the second indication offers greater difficulties, and the uncertainty of diagnosis which surrounds such cases is used as a sufficient argument by many in opposing the adoption of timely and efficient surgical treatment, and is responsible for the loss of many lives which might otherwise have been saved. The uncertainty of diagnosis must remain in the way of a more general adoption of laparotomy in the treatment of penetrating wounds of the abdomen treated by timid surgeons, and may lead to important medico-legal complications in the practice of bolder and more aggressive operators.

It is apparent that if some infallible diagnostic test could be applied in cases of penetrating wounds of the abdomen which would indicate to the surgeon the presence or absence of visceral lesions of the gastro-intestinal canal, the indications for aggressive treatment would become clear, and the medico-legal responsibility of the operator would be reduced to a minimum. As we can never expect by the study of symptoms, or by the ordinary physical examination, to fill this gap, I was induced to search for some reliable test which in such cases should prove that the penetrating bullet or instrument had injured the gastro-intestinal canal. It occurred to me that a wound in the stomach or intestine should be sought for in some such way as the plumber locates a leak in a gas-pipe. The first object to be accomplished was to prove the permeability of the entire gastro-intestinal canal to inflation of air, and the next step was to find some innocuous gas, which when inflated would escape from the intestinal wound into the peritoneal cavity, and from that through the external wound, where its presence could be proved by some infallible test. Numerous investigators of this question have come to different conclusions, particularly as to the permeability of the ileo-cæcal valve. We should *à priori* expect that air and gases, on account of their lesser weight and greater elesticity than water, could be forced along the intestinal canal with less force, and for that reason alone, if for no other, should be preferred to water in cases where it appears desirable to distend the intestine above the ileo-cæcal valve.

I made a set of experiments, twenty-six in number, to demonstrate the permeability of this orifice to gases without rupture or injury of any of the coats of the intestine. I next demonstrated the safety of the procedure as a diagnostic and therapeutic measure, by showing that the resistance of different portions of the gastro-intestinal canal was about the same, and everywhere greater than was necessary for the forcing of the gas into all portions of the tract. This was established by a large number of experiments, using the manometer or mercury gauge to determine the exact degree of pressure. A number of experiments were also made to demonstrate the ability to distend the gastro-intestinal canal by rectal insufflation of hydrogen gas, preliminary to the practical application of the hydrogen-gas test as a diagnostic measure in penetrating wounds of the abdomen. These furnished only so many more demonstrations of the permeability of the ileo-cæcal valve and the entire alimentary canal to rectal inflation of hydrogen gas. Many of these experiments were practised upon the human being.

Experiment LI. is particularly interesting. "I was desirous of experiencing myself the sensations which would be caused by inflation of hydrogen gas, and therefore submitted myself to experimentation. Under a pressure of one-half pound, nearly one and a half gallons of gas were inflated per rectum. The distention of the colon caused simply a feeling of distention along its course; but as soon as the gas escaped into the ileum, colicky pains were experienced, which increased as insufflation advanced, and

[1] An abstract of a paper read before the Surgical Section of the American Medical Association, May 9, 1888.

only ceased after all the gas had escaped, which was only the case after an hour and a half. When the intestines and stomach had become fully distended, the feeling of distention was distressing, and was attended by a sensation of faintness which caused a profuse, clammy perspiration. A great deal of the gas escaped by eructation, which was followed by great relief."

The colicky pains which attend inflation of the small intestine by air or gas are always caused by the peristaltic action of the bowels in their attempt to expel their contents, as they always assume an intermittent type, and subside promptly after the escape of the gas. In none of the experiments did the pressure exceed a pound. The escape of the gas through the ileo-cæcal valve, after distention of the colon, was easily recognized in every instance by a reduction of the pressure as well as by the auscultatory signs heard most distinctly over the ileo-cæcal region.

The experiments also demonstrated the fact that inflation of the intestinal tract, in order to be safe and effective, must be done *very slowly*, under a low, steady pressure, which will accomplish a great deal more than a higher pressure continued for a short time, and is attended by no risks whatever of causing rupture of a healthy intestine; and when cautiously practised can be resorted to, even in cases where the resisting power of the intestinal wall has been diminished by antecedent pathological processes.

The experiments further demonstrate the innocuous character of pure hydrogen gas upon the tissues of the body, since in none of them were any immediate or remote toxic effects produced. A number of experiments were made for the purpose of demonstrating the innocence of this gas, as well as its non-irritating character when brought in contact with living tissues, and also that the gas is promptly removed by absorption.

A set of experiments were finally made for the purpose of demonstrating the applicability of the rectal insufflation of hydrogen gas as a diagnostic measure in perforation of the intestine by gunshot wounds of the abdomen. They proved an infallible test in every instance. Contrary to the experience of other investigators, I found that fecal extravasation does not uniformly take place soon after gunshot wounds of the intestines, and in the cases where I observed it, some part of the colon had been wounded. Intestinal inflation, I therefore conclude, does not tend to increase the liability to this accident, and must, therefore, be looked upon as a harmless measure in this direction. Inflation as a preliminary measure greatly expedites the first step in the operation of abdominal section in cases where the intestine has been perforated or injured, as the gas which escapes into the peritoneal cavity separates the intestine from the anterior abdominal wall, and the incision can be made safely and rapidly without fear of wounding the intestine.

In order to guard against the accidental overlooking of a perforation after one or more openings have been closed, I think it advisable again to practise insufflation.

After a careful study of the subject of rectal insufflation of hydrogen gas in its various aspects, I do not hesitate to recommend its adoption in practice as an infallible diagnostic test in demonstrating the existence of a wound of the gastro-intestinal canal in penetrating wounds of the abdomen without resorting to an exploratory laparotomy.

In conclusion, I submit for discussion the following propositions:

1. The entire alimentary canal is permeable to rectal insufflation of air or gas.

2. Inflation of the entire alimentary canal from above downward, through a stomach tube, rarely succeeds, and should, therefore, be resorted to only in demonstrating the presence of a perforation or wound of the stomach, and for locating other lesions in the organ or its immediate vicinity.

3. The ileo-cæcal valve is rendered incompetent and permeable by rectal insufflation of air or gas under a pressure varying from one-fourth of a pound to two pounds.

4. Air or gas can be forced through the whole alimentary canal, from anus to mouth, under a pressure varying from one-third of a pound to two and a half pounds.

5. Rectal insufflation of air or gas, to be both safe and effective, must be done *very slowly and continuously*.

6. The safest and most effective rectal insufflator is a rubber balloon large enough to hold four gallons of air or gas.

7. Hydrogen gas should be preferred to atmospheric air or other gas for purposes of inflation in all cases where the procedure is indicated.

8. The resisting power of the intestinal wall is nearly the same throughout the entire length of the canal, and in a normal condition yields to a diastaltic force of from eight to twelve pounds. When rupture takes place, it either occurs as a longitudinal laceration of the peritoneum on the visceral surface of the bowel, or as multiple ruptures from within outward at the mesenteric attachment.

9. Hydrogen gas is devoid of toxic properties, non-irritating when brought in contact with living tissues, and is rapidly absorbed from the connective-tissue spaces and all of the large serous cavities.

10. The escape of air or gas through the ileo-cæcal valve from below upward is always attended by a blowing or gurgling sound heard most distinctly over the ileo-cæcal region, and by a sudden diminution of pressure.

11. The incompetency of the ileo-cæcal valve is caused by a lateral and longitudinal distention of the cæcum, which mechanically separates the margins of the valves.

12. In gunshot or punctured wounds of the gastro-intestinal canal, insufflation of hydrogen gas enables the surgeon to determine positively the existence of a visceral injury without the risks and medico-legal responsibilities incident to exploratory laparotomy.

ILLUSTRATIONS OF BLOODY DISCHARGES FROM THE UTERUS OTHER THAN NORMAL MENSTRUAL, AND THE IMPORTANCE OF PHYSICAL EXAMINATION IN THEIR DIFFERENTIATION.[1]

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IF we glance over the long list of uterine disorders which we find recorded in the text-books, we will notice that there are few of these which are not, at some period in their course, associated with a bloody discharge. Now, an escape of blood from the uterus, whether of greater or less intensity, a sudden gush, or the *stillicidium uteri*, which gives rise to a reddish-brown leucorrhœa, should, as we know, always be looked upon with suspicion; for while in some cases it may have no particular significance as regards local disease, in the majority of instances it is indicative of pathological changes taking place in the uterine tissue or mucosa. The tendency of most patients is to ignore or underestimate the importance of an inter-periodic loss of blood, and particularly if the hemorrhage seems to be only a prolongation of the normal menstrual flow, or appears as a dull, rusty leucorrhœa. Such patients are more likely to appeal to the physician on account of the effects of the blood loss—diminished strength, loss of color, etc.—than because of the condition itself. The bleeding is, however, a signal of danger, which, in most instances, may be averted by timely aid; but if the patient neglects the warning, and awaits a more positive demonstration of actual disease, the advent of the latter may be but the assurance that the disease has accomplished its work, and all efforts on the part of the physician thereby rendered futile. It is, therefore, incumbent upon the practitioner that no case of bloody discharge from the uterus be passed over lightly, but that in every instance active measures be undertaken to find out the cause, and relieve the condition.

Except in the case of very young girls, uterine hemorrhage demands a physical examination, and this should always be insisted upon. Nothing is more harmful to the patient than dosing with astringents to stop the bleeding, when we are in total ignorance of the cause. A hemorrhage which has been going on for months or years, the sufferer meantime ruining digestion and the secretory functions by the internal remedies taken, may frequently be almost instantaneously stopped by a simple operative procedure, demanding perhaps no longer than five minutes in its execution.

Although a bloody discharge may take place from the uterus at any time between the periods of puberty and the complete cessation of the menstrual function, and even after, a goodly proportion of these cases are seen at or about the time of the menopause. This time of life being characterized by degenerative or retrograde metamorphoses in the sexual organs, it is particularly liable to morbid changes in those organs, which may either tend to the destruction of life or to great future suffering and annoyance of the individual. Possibly these conditions, occurring as they are apt to at a definite period of life, may be classed with other obstacles, which, in the struggle for existence, serve as a check on over-population.

If we group a number of typical cases, occurring at the climacteric, and presenting symptoms not dissimilar, we can appreciate better the importance of a bloody discharge at this time, and the necessity of careful and thorough physical examination.

CASE I.—Mrs. B., aged fifty-one, a large, well-nourished, American woman, and the mother of several children. Menstruated last five months since. Excepting a slight bronchial affection of recent date, she has always enjoyed good health. During the morning of the day on which I was called, she expressed herself as feeling nervous, and having a fulness of the head, associated with dizziness. I found the patient on her back in bed, with the knees drawn up over the abdomen, cold, pale, and perspiring freely; the breathing short and quick, the countenance indicating great suffering. There was a profuse flow of blood from the genitals.

CASE II.—Mrs. H., German, aged fifty-two, mother of four children. For the past six months patient has had a "starchwater" discharge, which, on drying, leaves the napkins worn stiff. This discharge is followed each day by a slight loss of blood. There is more or less pain.

CASE III.—Mrs. C., American, aged fifty-two. Seen in consultation with Dr. Hamilton, of Tecumseh. Menopause two years since. Family history of cancer. One year ago the flow returned and was put down to "change of life." Three months later hemorrhage again occurred, and there was a regular loss of blood for two months. Following this the flow appeared every three or four weeks, and then every two or three weeks, such being the condition when I saw her. Pain is present, but is not a prominent symptom.

CASE IV.—Mrs. C., French, aged fifty-one. Kindly referred to me by Dr. S. P. Duffield. Patient has had two children; no abortions. For two or three years past there has been an irregular bloody

[1] Read by invitation before the Pere Marquette Medical Society, Michigan, May 8, 1888.

discharge from the uterus, which of late has been associated with a thick white discharge in which occasional pieces of a "skin-like material" were found. Patient is confined to bed, is weak and exsanguinated. There is considerable pain and soreness across lower portion of abdomen.

CASE V.—Mrs. McG., Irish-American, aged thirty-eight. Seen in consultation with Dr. H. A. Cleland. Patient has been married for thirteen years, but has remained unfruitful. Menstruation, which has of late been very profuse, has recently been almost a continuous flow, only a week or ten days intervening between the periods. Patient is much debilitated. Pain, very severe at times, over lower portion of abdomen.

CASE VI.—Mrs. B., American, aged fifty-seven. Seen in consultation with Dr. George P. Andrews. Menopause four or five years ago. For several years she has suffered from metrorrhagia, and watery discharge. At the date of my first visit, the patient was very pale, weak, and confined to bed the greater part of the time. There is a sense of uneasiness and discomfort, but not much pain, referable to the pelvis.

Here we have a series of cases occurring in women at about the same period of life, and presenting analogous symptoms, viz., loss of blood from the genitals, and pelvic pain or discomfort. From a careful history of these cases, experience may enable us to make a provisional diagnosis, but the symptoms of all are so similar that nothing but a careful physical examination will reveal the true conditions present, and if we give the menopause credit for the conditions, and attempt to cure, or even alleviate the patient's sufferings by the administration of internal remedies, we are worse than blind leaders of the blind, and certainly deserve to meet the reward of falling into the ditch.

In Case I. we have one of those explosions which sometimes occur during the climacteric. There is an attempt on the part of nature to rid the system of a certain amount of blood, which might otherwise prove a source of real danger, and like a nose-bleed at certain ages, possibly prevents so untoward an accident as cerebral hemorrhage. Barnes explains this condition very aptly when he says: "It is remarkable, that, as a result, probably, of the disposition which the uterus has acquired of acting as a periodical evacuant, long after the cessation of menstruation proper, it still continues to be the safety valve by which vascular repletion or tension is relieved."

It is a curious fact that this condition is sometimes seen in old women after ovariotomy. In one of my patients, sixty-three years old, from whom I removed a large double ovarian multilocular cyst, and who had not menstruated for ten years, quite a profuse bloody discharge from the uterus set in on the twenty-fourth day after the operation, and continued several days.

Case II. proved to be a simple pedunculated fibroid about the size of a hen's egg, readily removed, and with the resulting speedy cure of the patient.

Case III., an epithelioma of the cervix, presented on physical examination the usual characteristics of these growths at an early stage, and was probably at that time curable.

In Case IV., a positive diagnosis between sloughing fibroid and carcinoma or sarcoma could only be made after microscopical examination. It proved to be sarcoma.

Case V., in many respects similar to that just mentioned, turned out to be a fibroid involving the whole fundus uteri; while Case VI. was a double ovarian tumor, which I afterward removed. In this case there was also a small intra-mural fibroid, which almost disappeared under treatment, so that at the operation the uterus only appeared considerably thickened in its posterior wall.

Small fibroids of the submucous variety often exist without the patient's knowledge, as no symptoms are present.

In a case recently seen with Dr. C. G. Jennings, a tumor the size of a goose's egg, situated on the right horn of the uterus, was not discovered until the five months' pregnant womb made it apparent as a lump in the side. In another case which I delivered two years ago, three of these small fibroids were present on different portions of the womb, but had never caused the slightest inconvenience.

Illustrations of this class of bloody discharges from the uterus might be multiplied, but without further discussion of these, I desire to call attention to another group of cases in younger women, the symptoms of which are also similar.

CASE VII.—Miss R., a pale, anæmic girl, aged twenty-three, with a family history of phthisis; has had a bloody discharge midway between the menstrual periods for two years past, which at present leaves her only for a few days during the month. There is no particular pain, but the constant drain on the system is exhausting her.

CASE VIII.—Miss C., American, aged sixteen; referred to me by Dr. Cleland, began to menstruate a little over a year ago, and has continued to lose blood at irregular intervals since, the flow varying greatly in amount. Three weeks before my visit she had flowed continuously for over two weeks, and as a result was looking pale and pasty. There was no pain attending the flow.

CASE IX.—Mrs. H., American, thirty-two years old. The mother of two children; suffers from extreme menorrhagia, as a result of which she is very weak, and unable to walk or assist herself. There is no pain.

CASE X.—Miss F., American, aged thirty-one; began two months ago to have considerable spasmodic pain in lower portion of abdomen, running down to the feet, and attended by backache, nausea,

vomiting, and general malaise. She has had eight of these attacks, but is now feeling fairly well. For six weeks there has been a slight bloody discharge from the uterus, the amount lost increasing with the advent of the distressing symptoms noted.

Here, again, we have four cases presenting much the same symptoms, but differing widely in their physical conditions.

Case VII. was diagnosed as *endometritis fungosa hemorrhagica*, and two curettings during the year removed a considerable quantity of granulations from the cavum uteri. The family history gave rise to the suspicion of tuberculosis, but careful microscopical examination of the granular material removed, failed to reveal the familiar bacillus. I am quite certain that in this case the climate had much to do in the causation of the uterine congestion, for after a summer at the seaside, with change of diet (sea food), and salt-water bathing, the young lady has had no further return of the old trouble.

The hemorrhage in Case VIII. was due to the presence of a small varicose tumor in the left labium major, which, by keeping up a continuous irritation, determined a larger quantity of blood than normal to the parts. Removal of the dilated vessels caused a disappearance of the symptoms, and menstruation became regular and normal in amount.

In Case IX. we have a condition which, I believe, is very frequently overlooked by the practitioner, namely, a menorrhagia resulting from an old and deep cervical laceration. The relief to the patient following the operation for the restoration of the uterine neck was immediate and gratifying.

Case X. differed slightly from the other in having a history of previous pain. It was one of those obscure cases of retro-uterine hæmatocele which are often so puzzling to the diagnostician.

In the foregoing remarks I have briefly attempted to show the close similarity in symptoms manifested by very different conditions affecting the uterus. Many other causes of hemorrhage more familiar, as metritis, subinvolution, etc., might have been added, but sufficient has been said to indicate the great importance of physical examination in the diagnosis of those conditions before treatment can be intelligently inaugurated.

83 LAFAYETTE AVENUE, DETROIT.

MEDICAL PROGRESS.

The Administration of Medicines to Children.—JACOBI writes as follows, on this point, in the *Archives of Pediatrics* for May, 1888: In the administration of medicines excitement on the part of the patient must be avoided; the nervous system of infants and children loses its equilibrium very easily. Fear, pain, screaming, and self-defence lead to disturbances of circulation and waste of strength. Preparations for local treatment or the administration of a drug must be made out of sight, and the latter ought not to have an unnecessarily offensive taste. The absence of proper attention to this requirement has been one of the principal commendations of "homœopathy," whatever that may have been the last twenty-five years. Still, the final termination of the case and the welfare of the patient are the main objects in view, and the choice between a badly tasting medicine and a fine-looking funeral ought not to be difficult. In every case the digestive organs must be treated with proper respect; inanition is easily produced, and vomiting and diarrhœa must be avoided. The most correct indications and most appropriate medicines fail when they disturb digestion; it is useless to lose the patient while his disease is being cured.

The administration of a medicament is not always easily accomplished. Indeed, it is a difficult task sometimes, but one in which the tact or clumsiness of the attendants has ample opportunities to become manifest. For "when two do the same thing, it is by no means the same thing." Always teach a nurse that a child cannot swallow as long as the spoon is between the teeth; that it is advisable to depress the tongue a brief moment, and withdraw the spoon at once, and that now and then a momentary compression of the nose is a good adjuvant. That it is necessary to improve the taste as much as possible need not be repeated. Syrup will turn sour in warm weather, glycerine and saccharin keep; the taste of quinine is corrected by coffee (infusion or syrup), chocolate, and "elixir simplex," a teaspoonful of which, when mixed each time before use, suffices to disguise one decigramme —one and a half grains—of sulphate of quinia. Powders must be thoroughly moistened; unless they be so, the powder adhering to the fauces is apt to produce vomiting. Capsules and wafers are out of the question, because of their sizes; pills, when gelatine-coated, or otherwise pleasant and small, are taken by many. The rectum and nose can be utilized for the purpose of administering medicines in cases of trismus, cicatricial contraction, or obstreperousness. Both of these accessories it may become necessary to resort to for weeks in succession.

Oertel's Treatment of Heart Disease.—The *British Medical Journal* of April 21, 1888, reports the discussion on this subject at the recent German Medical Congress as follows: PROFESSOR OERTEL (Munich), whose method has attracted so much attention, both at home and abroad, since the cure of Prince Bismark by Dr. Schweninger (hence falsely "Schweningercur"), opened the discussion on the treatment of chronic diseases of the heart-muscle. After stating that, in his opinion, Stokes, who first introduced this method, had not found any followers, he said that it had first been employed in Germany by himself, with great success on a relative of his own, who suffered severely from weakness of the heart-muscle in 1875. During the following nine years he endeavored to give a scientific basis to this mode of treatment by experiments on animals and observations on men, which are to be found in his book *Therapie der Kreislauf Störungen*. He had, however, reconsidered his position, and recognizing that his treatment was not equally suitable for all cases, he would exclude from it advanced atheroma and grave incompetence of the heart-muscle. By a combination of an appropriate diet (animal food containing little water) and exercise obtained by the gradual ascent of

mountains (Terraincur), he obtained the following results: 1, diminution of the quantity of fluid in the body, and removal of the condition which he had termed "serous plethora;" 2, oxidation of the fat; 3, compensation between the arterial and venous system; 4, strengthening of the heart-muscle. This method, he said, ought not to be employed when the dyspnœa was increased by it and the flow of urine diminished.

PROFESSOR LICHTHEIM (Berne), his opponent in the discussion denied the existence of a serous plethora, and cited the recent publications of Bamberger, and one of his own pupils, showing that the relative amount of red corpuscles and serum was a constant quantity. He considered the method only suited (although then very effectual) for cases of fatty heart in persons of sedentary habit who lived high, and for the removal of dropsical swellings. The chief danger lay in acute dilatation of the ventricles; several of the cases of sudden death recorded were thus brought about.

DR. KISCH (Prague) mentioned that in cases of general obesity, with or without dropsical swellings, he had found that the proportion of red corpuscles was always constant.

Formulæ for Anthrarobin, a New Remedy in Dermatology.—BEHREND, in the *Therapeutische Monatshefte* for March, 1888, gives the following formulæ:

In ointments,

Anthrarobini	10 parts.
Ol. oliv.	30 "
Lanolini	60 "

A 10 per cent. ointment.

Also,

Anthrarobini	20 parts.
Ol. olivar., Lanolini	āā 40 "

A 20 per cent. ointment.

And,

Anthrarobini	10 parts.
Ol. olivar.	15 "
Adipis	75 "

A 10 per cent. ointment.

Also,

Anthrarobini, Ol. olivar.	āā 20 parts.
Adipis	60 "

A 20 per cent. ointment.

Alcoholic tinctures may be prescribed as follows:

Anthrarobini	10 parts.
Alcohol	90 "

A 10 per cent. tincture.

Also,

Anthrarobini	20 parts.
Alcohol	80 "

Dissolve by boiling.

A 20 per cent. tincture.

A glycerine solution is thus ordered:

Anthrarobini	10 parts.
Glycerin.	80 "

Solutions with borax, in water or glycerine:

Anthrarobini	10 parts.
Boracis	8 "
Aq. dest.	80 "

And,

Anthrarobini	20 parts.
Boracis	35 "
Glycerin., Spiritus	āā 90 "

Anthrarobin may be used where chrysarobin is indicated. (See THE MEDICAL NEWS of April 14, 1888, p. 412.)

A Loose Body in the Elbow-joint.—In the *Gazette Médicale de Strasbourg*, of April 1st, DR. G. BŒCKEL relates a case which is of some interest in connection with views which have recently been expressed as to the nature and mode of origin of loose bodies in joints. The patient, a strong, healthy man, aged forty-five, fell from a ladder on his left elbow. Immediately after the accident he lost all power of movement in the forearm. When he came under Dr. Bœckel's care some two months later, movement was found to be very limited and painful, both pronation and supination being accompanied by grating in the joint. Between the olecranon and the external condyle of the humerus a hard body was felt projecting slightly, which could be moved laterally to the extent of some millimetres. Dr. Bœckel was under the impression that he had to do with a case of old arthritis deformans, which the injury had started into renewed activity by displacing an osteophyte. He cut down on the loose body, and with considerable difficulty removed it, when he was surprised to find that it consisted of half the head, with a small piece of the neck, of the radius. The patient made an excellent recovery, and in three weeks from the date of the operation had so far regained the use of his limb that he was able to do light work with it. Dr. Bœckel said that this was the first case he had met with in which the loose body was a fragment of articular surface broken off by violence, and he took the opportunity of formally recanting a different opinion to which he had recently committed himself on the subject. In fact, less than a year ago (*Gaz. Méd. de Strasbourg*, 1887, No. 11, p. 121) he had maintained that such a mode of origin was inadmissible, the loose body being in all cases formed by vegetations springing from the synovial membrane or the articular cartilage.—*British Medical Journal*, April 14, 1888.

Stab Wound of the Left Ventricle; Recovery.—KIAWKOFF, in *Russkaja Medizina*, No. 42, reports the case of a Cossack who in a quarrel with a fellow soldier received a stab wound in the fourth intercostal space of the left side, in the mammillary line and parallel to the ribs, which bled profusely. The wound was cleansed, a compress applied, and restoratives were given. The area of dulness was greatly extended over the cardiac region, but the patient gradually recovered, and was discharged from the hospital in four weeks' time. Five days afterward, in attempting to lift a heavy weight, the patient expired suddenly. Post-mortem examination showed the integument wound closed; the pericardium was adherent to the wound. The cavity of the pericardium was filled with dark blood; a small punctured wound of the left ventricle was present, whose edges showed beginning fatty

degeneration of the heart muscle; subacute endocarditis was diagnosticated. The wound in the ventricle had probably closed, but the sudden strain had ruptured the cicatrix; the endocarditis resulting from the wound had not yet been recovered from. The reporter writes that seven per cent. of heart wounds are stated to have healed.—*Centralblatt für Chirurgie*, March 24, 1888.

Antipyrin and Saccharin in Diabetes.—*Les Nouveaux Remèdes* of April 8, 1888, gives the following formula:

℞.—Antipyrin . . . . . ʒ 2½.
Saccharin. . . . . grs. 3.
Sodii bicarb. . . . . grs. 1½.
Infus. caffeæ . . . . . ʒ 4½.—M.
Sig.—Teaspoonful to dessertspoonful three times daily.

An Explanation of the Action of Antipyrin.—In the *Practitioner* for April, 1888, BOKENHAM, after reporting various cases treated by antipyrin, explains the action of large and small doses as follows:

It appears to me that a reasonable explanation of the fact that small doses, given for the relief of migraine, seem quite as serviceable as much larger ones, may be found by considering the rate of excretion of the drug. It will be observed that diuresis was produced in some of the cases just narrated, and this is probably a key to the path taken by antipyrin in its elimination from the body. My own opinion is, that it is only the first portions that are absorbed which give relief, and that the surplus dose only throws unnecessary work on the kidneys. If these organs are not acting efficiently, the drug may accumulate in the system and produce poisonous symptoms. It is difficult to see, too, how such small doses can possibly produce that tolerance which has been found to follow the use of large doses with the same object, and which has rendered subsequent relief by the drug impossible.

Early Vaccination.—The *Lancet* of April 14, 1888, writes as follows on this point:

An infant, aged four weeks, who died from suffocation, was the subject of a coroner's inquest at East Greenwich last week. That the death was due to suffocation only was perfectly obvious; but the baby had been vaccinated when six days old, and the jury added to their verdict that this was too young an age to vaccinate a child, and desired the coroner to make a representation to the authorities "with a view to the prevention of similar cases in the future." Whether the jury hope to prevent the suffocation of children by this means is not quite clear, but we are led to assume this is their object; they appear, however, to have been informed by the practitioner who made the post-mortem examination that it was certainly not safe to vaccinate a child at so early an age, and on this point we may say a word. The child had been born in the Greenwich Union Infirmary, and children born in such institutions would, unless vaccinated before leaving, go out into the world and remain unprotected against smallpox, for these cases cannot often be traced by vaccination officers. There was, therefore, much reason for the vaccination of the child if it could be done without undue risk. Experience has amply shown that children at this very early period of life bear vaccination well, and we have no hesitation in saying that this operation is as nothing compared with the remaining susceptible to smallpox. We trust, therefore, the Greenwich guardians will not be moved to prevent the early vaccination of children born in their institutions.

The Treatment of Meningitis in Children.—The *Journal de Médecine* of March 18, 1888, in a detailed description of the treatment of meningitis in children, advises cold applications to the head and counter-irritation, also prompt purgation, if need be, by croton oil. If convulsions occur:

Ether . . . . . 20 parts.
Syrup. . . . . 30 "
Aquæ . . . . . 100 "

of this fifteen minims may be given as needed.

Epileptiform convulsions may be treated by

Zinc. oxid.,
Calomel.,
Valerian. pulv. . . . āā gr. 8.

In ten powders. One every four hours.

Photograms of the Eye.—The *British Medical Journal* writes that in the recent (sixtieth) Naturforscherversammlung in Wiesbaden both Dr. Claude du Bois-Reymond and Professor Cohn exhibited photograms of the eye obtained by means of the "lightning" illumination (discovered by Herren J. Goedicke and A. Miethe, Berlin, S. W., Ritterstrasse 74). The illumination is so sudden and fleeting that when it occurs in a chamber in previous absolute darkness, the pupil has not time to contract, and thus the maximal dilatation can be represented on photograms. It is hoped that by appropriate arrangements the retina can be thus photographed during life.

Morphinic and True Tetanus.—BROCK, of Richmond, in the *Virginia Medical Monthly* for April, 1888, concludes from cases under his observation, and from his study of the subject, that the disease may occur as:

(1st) *True tetanus*, established by the use of a foul syringe, or a filthy solution of morphine—either or both of them being contaminated by the presence of the pathogenic germ on which tetanus depends.

Or (2d) to the effects produced by the continued use of an impure article of morphine, rendered impure by the presence of one or more of the tetanous group of alkaloids, the action of which on the spinal cord produces a set of symptoms that are scarcely—if at all—distinguishable from true tetanus.

The Bacillus of Dysentery.—At a meeting of the Academy of Medicine of Paris on April 17th, CHANTEMESSE and VIDAL reported that they had found and cultivated a specific bacillus, in patients suffering from dysentery contracted in hot climates. The bacilli were found in the intestines and their contents, and in the spleen and mesenteric glands. The microbe develops rapidly on gelatine, in bouillon, and in water; it is colored with anilin only with difficulty. Rabbits inoculated with cultures of the bacillus, and by intra-peritoneal inoculation developed the lesions characteristic of dysentery. Peritonitis, pericarditis, and fibrinous pleurisy, were developed after intra-peritoneal inoculation with the bacilli.—*Revue de Clin. et de Thèr.*, April 19, 1888.

A Liniment for Use in Neuralgias.—*L' Union Médicale* of March 22, 1888, gives the following formula:

Alcohol. camphor.	parts 90.
Ether. sulf.	parts 30.
Tinct. opii	parts 6.
Chloroform.	parts 20.

Flannel may be saturated with this fluid and laid upon a painful region of the body; over this an impervious material should be placed.

Is Chloroform a Safe Anæsthetic for Children?—The *Lancet* of April 14, 1888, writes that one of the many points of interest connected with the medico-legal aspects of anæsthetics was introduced at a recent inquest, held by Mr. A. Braxton Hicks, upon the body of an infant who died under chloroform at one of our large hospitals. The child, aged five months, was operated upon for the removal of a nævus, and died from the effects of the chloroform after the operation had been completed. The report states that the "coroner elicited that children very rarely die under chloroform; they take it readily, and easily recover." Children, it is true, take this anæsthetic fairly well, but it is hardly consonant with our present state of knowledge to allege that fatalities among infants and children under fifteen are less frequent than among adults, always providing the individual in either category is not the subject of disease. The ill-fed and poorly nourished children who come to our hospitals are not favorable subjects for chloroform administration, and the belief, which we fear is only too prevalent, that the young rarely die under its influence is likely to aid in increasing the number of victims who are yearly sacrificed to chloroform. It is highly probable that, when healthy members of the community are compared, no decennial period of life can be selected as being less obnoxious to chloroform than any other. Snow's tables, although faulty in some points, show, and we believe truly, that the maximum of deaths occur from chloroform between the ages of fifteen and forty-five; but such deaths are not to be attributed simply to an age liability, but to many intercurrent circumstances conditioning life during that busiest period of existence. When children are too small to render the exhibition of nitrous oxide gas and ether advisable, it is wiser to employ chloroform diluted with ether, as in the A.-C.-E. or one of the many kindred mixtures.

Antipyrin versus Insufflation in Whooping-cough.—GENSER, at a recent meeting of the Vienna Medical Society, reported thirty-six cases of whooping-cough treated by insufflation of various remedies, the average duration of the disease having been forty-three days. Insufflations possess this disadvantage, that they often cause attacks of coughing and vomiting, which greatly distress and weaken the patient. In marked contrast were the results obtained by the use of antipyrin. Taking one and one-half grains as his unit, Genser gave to children as many times this unit in twenty-four hours as the child was years old; for example, when ten years old fifteen grains. He often increased the doses to one and one-half times the original dose. Antipyrin was willingly taken in solution, and had only good effects. In 120 cases so treated, the average duration of illness was twenty-four and one-half days.—*Deutsche medicinische Wochenschrift*, April 19, 1888.

The Communicability of Tubercle by Milk.—PARKES, of London, in the *British Medical Journal* of April 21, 1888, writes as follows on this point: Whilst not denying that the tubercular virus may find other means of reaching the digestive tract than through unboiled cow's milk it appears to me that there are no sufficient safeguards in the management of town dairies to warrant us in assuming that milk from cows in an advanced stage of tuberculosis has no chance of being mixed with the milk of other healthy cows. In every dairy of any size there will probably be tubercular cows, some of them, perhaps, with tubercular deposits in the udders; and as it is the common custom with dairymen to mix together the milk yielded by different cows, it is not too much to assume that tubercle bacilli may be widely distributed in the milk supply of any town. It has been said that the tuberculosis of cattle is not the same disease as the tuberculosis of man, and that the absence of any proof of the human variety having ever been dependent upon ingestion or inoculation of the virus of the bovine variety tends to strengthen such a belief. To this it may be replied that the bacilli of bovine tuberculosis are identical—according to all bacteriological methods at present known—with those found in tubercular formations in the organs of man, and that although the disease presents anatomical differences in man and cattle, these differences may be explained as being due to differences of soil in the human and bovine tissues, the bacilli ingrafting themselves in those tissues which present conditions most favorable to their growth and development; secondly, absence of proof may only mean want of observation or recorded data, and cannot be held to imply that at no future time will satisfactory evidence of the dependence of the human disease upon a bovine source be brought to light.

Having regard to all those considerations, surely, the time has arrived when a radical change in the present methods of milk production and milk consumption is urgently needed. In the first place it should be rendered illegal for cows known to be suffering from tuberculosis to be kept in stock by dairymen and farmers for milking purposes; and, secondly, in no household should unboiled milk be consumed, more especially by children. No other animal food is consumed by civilized nations in an uncooked state; and by the light of our recently acquired knowledge it would appear that there is as much, or more, danger connected with the practice of drinking unboiled milk as of eating raw flesh.

Exposure to the heat of boiling water for five minutes destroys the life and action of the tubercular virus (Klein); and the same is true of the other specific disease poisons. By such simple means, then, is it possible to guard against an ever-present source of danger, as well as to obtain protection from those possibilities of the introduction into our bodies of the viruses of enteric fever, scarlet fever, and the like, which the experience of past epidemics has taught us to be latent possibilities in milk, with powers of development at the most unexpected periods. If medical practitioners generally recognized the importance of these views, and were careful to enforce them upon those entrusted with the care of delicate children of scrofulous diathesis, or with hereditary tendencies to tubercle, a commencement would be made in the right direction, which would gradually extend itself through all classes of society.

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SATURDAY, MAY 26, 1888.

SULPHONAL, A NEW HYPNOTIC.

THE restless life of modern civilization has so far murdered sleep that poppies and mandragora and the drowsy syrups of the East no longer serve us. They have lost their old charm and grow delusive and uncanny. On the one hand, we dare not use ourselves to them lest they make us their slaves for life; on the other, they fail us because they have become feeble and uncertain of effect. Too often these ancient drowsy drugs, whether they bring sleep or not, play sad pranks with our nerves and stomachs on the morrow. Thus it has come to pass that the quest for some new sleeping draught that has no drawbacks, either for to-night or to-morrow, has busied the modern therapeutist alike in field and laboratory. It is not probable that the ideal hypnotic, invariably certain, safe, and prompt alike for the well and the ill, will ever be found. The true nepenthe, like the fountain of youth and the philosopher's stone, exists not in nature but in the imaginations of men. Sleep and forgetfulness for a while, however, we can and often must have. The sleep-inducing properties of the modern, as of the older hypnotics, have, as a rule, been discovered by chance, and usually in the course of experimental studies of the effects of new-found substances upon animals.

KAST, of Freiburg, in the *Berliner klinische Wochenschrift* of April 16, 1888, in the course of investigations conducted in association with Baumann, in regard to the sulphur combinations in animal tissues, has brought to light a hypnotic of great importance. This substance is an oxidation product of a combination of æthylmercaptans with acetone. It crystallizes in large, colorless, tasteless, and odorless plates, soluble in one hundred parts of water at ordinary temperatures, and readily soluble in alcohol and in mixtures of alcohol and ether. It resists alike the action of acids and alkalies.

Administered to dogs, this substance produced ataxic phenomena, followed by muscular resolution, and finally by light slumber, passing into deep sleep lasting several hours. Upon waking, the animals were at first unsteady upon their feet, but soon came right again, eating with appetite and showing no trace of disturbance from the drug. Sleep by no means invariably resulted, the effects of the drug being occasionally, and especially in strong animals, limited to the above-mentioned motor disturbances. It was then seen that the drug in question possessed powerful physiological activities, affecting primarily the gray matter of the cerebral cortex.

Its effects in healthy human adults, in doses of from 45 to 60 grains, were somewhat analogous, the muscular phenomena being, however, absent, while the tendency to deep and prolonged sleep was, under circumstances favorable to repose, very great. Thus the customary short after-dinner nap of surgical convalescents in a quiet ward, was prolonged into a sleep of several hours, so deep that the patients were aroused with difficulty. The sleep thus induced was followed by no trace of derangement of the nervous system or digestion.

The hypnotic influence of the preparation in the insomnia of pathological conditions was next extensively studied. The sleeplessness of "neurotic" persons, of those suffering from organic disease of the brain, of old age, of the acute febrile affections, of the stadium ultimum of heart disease, of senile dementia attended by active delirium, yielded more or less promptly and completely to the influence of this remarkable drug.

The average single dose in these investigations was 30 grains. In females, as a rule, 15 grains only were required to produce full results; while in robust men as much as 45 grains were frequently given, without unpleasant after-effects. These doses had little or no effect upon the circulation or respiration. Spectroscopic and microscopic investigations showed that the drug exerts no unfavorable influence upon the composition of the blood. It is, also, without unfavorable local action upon the gastro-intes-

tinal mucous membrane. Kast has observed no indication of diminished effect from the continued use of the drug, notwithstanding the fact that some of his patients had taken it regularly for several weeks.

Kast concludes that sulphonal favors the usual periodical need of sleep, and when the normal tendency is lacking, calls it into existence. It is free from the dangers of opium and chloral, much more efficacious than the bromides, and of wider applicability than methylal, acetophenon (hypnone), urethan, paraldehyde, or amylen hydrate.

To this substance, which belongs to the group of the disulphons, Baumann has given the name diæthylsulphondimethylmethan, a designation against the scientific propriety of which nothing can be urged, but which is inconvenient for everyday use in practical medicine. The term "sulphonal," appears to meet the requirements of commerce,

Sulphonal may be administered in powder in water, or mixed with any convenient menstruum, or, being without taste or odor, in milk, soup, or tea. As to its fate in the organism, but little is as yet known: it is eliminated in great part with the urine in the form of other organic sulphur combinations.

We may look for further reports in regard to sulphonal. Already RABBAS, Assistant Physician in the Irrenanstalt in Marburg, has published in the *Berliner klinische Wochenschrift* of April 23, 1888, the results of his observations in twenty-seven insane patients, to whom the drug was administered on two hundred and twenty-five different occasions. These patients had been under observation for varying periods, and their previous use of various narcotics constituted control experiments which invest his researches with peculiar value. His conclusions are as follows: Sulphonal is a hypnotic which in moderate doses (30 to 45 grains) produces a more certain and better effect than amylen hydrate and paraldehyde in maximum doses. Its results are satisfactory, even in patients accustomed to the use of narcotics. It possesses decided advantages over these drugs in respect of taste and odor. While chloral hydrate induces sleep more rapidly than sulphonal, its effects are decidedly less lasting. Doses of sulphonal of 30 to 45 grains are followed, as a rule, by good results, even in conditions of great excitement. Prolonged use does not necessitate increased doses. Sleep follows usually in half an hour; occasionally, not for an hour or even two hours, and continues without interruption six or eight hours or longer, the effect being gradual and continuous, and the sleep in all respects like normal sleep. Large doses (60 grains) followed, after a short interval, by the usual dose (30 to 45 grains), produced no evil effect. Unpleasant after-effects do not occur. The appetite, digestion, respiration, and heart's action were in no way unfavorably affected.

Rabbas, while strongly advocating the use of sulphonal as a hypnotic, especially in insane patients, ends his report with the remark that it sometimes fails—there is no such thing as an absolutely certain hypnotic.

THE CARTWRIGHT LECTURES ON FEVER.

IN DR. WELCH'S lectures we not only have an able summary of our existing knowledge of fever, but a masterly presentment which will prove invaluable to the student as a starting-point for fresh investigations, and to the practitioner as offering suggestions on many points in etiology and treatment. One who has groped in the dim light of the theories of the past twenty-five years feels encouraged to hope, on rising from the perusal of these lectures, that a solution of the problem is not very far off, and that we shall ere long reach the heart of the mystery which for so many centuries has occupied the minds of the great thinkers of our profession. In the first lecture the conclusion is reached that fever-producing agents act in some way upon the nervous mechanism controlling the production and discharge of heat. The question of heat centres so carefully studied experimentally by Ott should engage the attention of clinicians, as the results of Hale White's observations indicate that we have here an important field for observation.

In the second lecture on the effects of increased temperature, questions of the highest clinical interest are discussed, such as the relation of the various symptoms associated in the febrile process to the elevation of temperature. High fever is not the only danger nor is it always, as Liebermeister held, the chief indication for treatment. Of the experimental evidence brought forward in this connection that relating to the action of high temperature on the heart muscle is of special interest. Dr. Welch thinks that we have been too hasty in assigning to degeneration of the heart muscle so large a share in the production of heart failure in fever. The symptoms may be present during life without extensive corresponding post-mortem changes, and, on the other hand, there may be extreme degeneration

without symptoms. That fatty degeneration does not necessarily impair the functional activity of muscle seems proven by the fact that the blood pressure in animals with hearts demonstrated to be fatty is not lower than the normal. This entire section is worthy of the most careful study. There is no more important question offered for solution than the definite determination of the respective action on the one hand of the high temperature, and on the other of the infective agent.

In the final discussion on the etiology of fever, Dr. Welch has marshalled a long series of valuable facts in a most suggestive and instructive manner. Of special interest just now are his remarks on the group of pyrogenic agents which have no necessary connection with microörganisms, and which are either not foreign to the healthy organism, or are readily formed by unorganized ferments from normal or abnormal constituents of the body. The influence of non-pathogenic and pathogenic organisms in the production of fever is presented in a forcible and attractive way.

It is no disparagement to former holders of the lectureship to say that the value of the Cartwright foundation has never been better illustrated than in the course just completed, and to the Alumni Society of the College of Physicians and Surgeons of New York are due the thanks as well as the congratulations of the profession.

It is pleasing to note in these valuable lectures the repeated references to the work of American investigators on this most complex of all physiological problems—to Wood, Ott, Martin, and others; and it is also gratifying to have so able and comprehensive study from a member of the Johns Hopkins University, an institution, the medical department of which may, we trust, give a stimulus to advanced study in medicine and surgery in this country, such as the sister faculties have already given to literature, history, and science.

A TEST FOR INTESTINAL PERFORATIONS.

WHILE it is very generally admitted that perforations of the gastro-intestinal tract should be closed by sutures, one need only read the discussions during the past year at the American Surgical Association and the Congress of French Surgeons, as well as the views expressed by recorders of individual examples of shot wounds of the belly, to be convinced that surgeons do not agree as to the propriety of exploratory laparotomy in doubtful cases. This hesitation is due, partly, to the obscurity of the early symptoms, and partly to the legal complications that may arise, but more to the fact that, up to the present time, there has been no accurate test in diagnosticating the existence of perforations of the gut, without a resort to exploratory laparotomy.

In the current number of THE MEDICAL NEWS may be found an abstract of a remarkable paper read by SENN before the Surgical Section of the American Medical Association at its recent meeting, in which rectal insufflation of hydrogen gas is recommended as an infallible test for intestinal perforations. We had the pleasure of witnessing the author's experiments at Cincinnati, on three dogs, which conclusively proved the truth of his assertions as to the safety and absolute reliability of the measure.

It is scarcely to be expected that every surgeon will have a bag of hydrogen gas ready for emergencies, but there is no reason why every hospital should not be equipped with such a contrivance, to be used not only by its staff, but also to be available to other practitioners whenever it may be required.

AT a meeting of the Trustees and Faculty of the Medical College of the State of South Carolina, held last week, the chair of surgery was divided into clinical and didactic surgery. Prof. R. A. Kinloch, who has long held the chair of surgery, was assigned to the chair of clinical surgery, and Dr. Manning Simons elected to that of didactic surgery.

Dr. P. Gourdin de Saussure was elected to the chair of obstetrics and gynecology made vacant by the death of Prof. J. Ford Prioleau.

Prof. Kinloch was made Dean of the Faculty.

DR. CHARLES MCBURNEY has been appointed Visiting Surgeon to Roosevelt Hospital, New York, in place of Dr. Sands, recently resigned. Dr. R. J. Hall has been appointed Attending Surgeon to Bellevue Hospital, and Dr. George L. Peabody Attending Physician.

IT is announced that Secci, the faster, has begun a fast of thirty days in Florence, under the supervision of Italian physicians, who seek to ascertain from his fast how long the digestive organs may be safely left at absolute rest, as such knowledge would be valuable in abdominal surgery, in hemorrhage from perforation, and other conditions. Secci is allowed a saline laxative, an alkaline beverage water to drink and to use in cleansing the mouth, and a little olive oil to use by inunction.

SOCIETY PROCEEDINGS.

AMERICAN MEDICAL ASSOCIATION.

Thirty-ninth Annual Meeting, held at Cincinnati, May 8, 9, 10, and 11, 1888.

(Specially reported for THE MEDICAL NEWS.)

SECTIONS.

MEDICINE.

(Concluded from page 563.)

WEDNESDAY, MAY 9TH.

The Section went into an

ELECTION OF OFFICERS FOR THE ENSUING YEAR

which resulted as follows:

Chairman.—Dr. F. C. Shattuck, of Boston.

Secretary.—Dr. G. A. Fackler, of Cincinnati.

DR. WILLIAM PEPPER, of Philadelphia, opened the discussion

ON THE DIAGNOSIS AND TREATMENT OF DISEASES OF THE STOMACH.

He illustrated his remarks with the following case: A man had been losing two pounds in weight per week for a period of sixteen weeks. No disease could be detected. Blood and urine normal. No affection of heart and lungs. No enlargement of the spleen or glands. Eye ground presented no data of significance. No pain, vomiting, or constipation. Teeth had failed, and hence there was an element of imperfect mastication. Careful diet with small doses of arsenic brought about a temporary cessation of loss of flesh; but emaciation in time resumed its progress. Only by excluding every affection demonstrable did he arrive at a diagnosis of developing cancer in the walls of the stomach.

The case resulted fatally three to four months after it first came under his observation, and the walls of the stomach were found to be the seat of general carcinomatous infiltration. Such cases demonstrate the want of some additional more delicate means of diagnosis to insure accuracy. Not only is this true in rare cases like this, where all symptoms are absent, but many cases will be met with in which one or two symptoms may be present, and yet the group is too inadequate to make a definite diagnosis. He had but recently seen a business man, sixty-four years of age, who had previously enjoyed good health, but was suddenly attacked with severe pain in the pit of the stomach, coming on when that organ was empty and at night. It occurred every night, and extended from the pit of the stomach to the back. His bowels were quiet or a little costive. He had lost from thirty to forty pounds, was pale but not cachectic. Most careful search of the epigastrium revealed nothing. His radials were hard, and arcus senilis was present, the abdominal aorta appeared somewhat enlarged; no evidence of pancreatic disease. Under the use of careful diet, hydrocyanic acid, the application of the thermocautery to the region over the stomach and back, a most remarkable improvement was noted. But it was only transient. Months passed and emaciation advanced, and a hardness could be detected close up to the crura of the diaphragm. Patient died, and an autopsy revealed a fungus epithelioma in the superior posterior wall of the stomach, doubtless involving nervous filaments in the dense adhesions.

We recognize then the need of something outside of such clinical data as pain, vomiting, emaciation, etc., which, although they usually suffice to establish a diagnosis, still fail when they are most needed for differential diagnostic points.

He then alluded to a field which seemed to offer us assistance in this regard, viz., the application of organic chemistry in the examination of the contents of the stomach removed in a systematic manner. Vomiting usually occurs so soon after eating, and the vomited matter is so mixed with portions of the previous meals, or with mucus, etc., that the study of the substance is inadequate. The contents of the stomach should be removed by aspiration. It should be done at a definite time after the ingestion of a definite meal, which shall consist of a certain amount of mixed food, starchy and nitrogenous. The matter obtained should be tested for free hydrochloric acid, lactic acid, and peptic strength—that is, the power it possesses still further to digest albumen.

The methyl-violet is one of the best tests for hydrochloric acid. It is asserted by Riegel that, in thousands of investigations he has found that when cancer is present, no free hydrochloric acid will be found in the contents of the stomach six hours after a test meal. Here, then, we have a point of enormous importance if it be confirmed.

The secretion of the stomach is just as accessible as urine, though, of course, it cannot be collected with equal facility. The statements have been confirmed by most excellent observers. The ability to diagnose accurately has distinct limitations. In our efforts to diagnose a certain case, some or all the classical symptoms may be absent. Here, then, a field has been opened that appears to promise large results. What has been presented to us may be accepted as possessing confirmed value, although not regarded as infallible.

DR. F. C. SHATTUCK endorsed the conservative position of Dr. Pepper with regard to the test for cancer. The modern methods are very promising. At present our position must be a waiting one. In many cases the free hydrochloric acid is absent, and persistently absent. We should be careful not to draw our conclusions from one examination. Free hydrochloric acid has been found in undoubted cases of cancer, and has been absent in atrophy of the gastric tubules, in chronic gastric catarrh, and even in the normal state. Another question to consider is the quantity of the acid present. While the test for the acid is satisfactory and easy of application, yet, unfortunately, we possess no test which can be put to much clinical use to determine accurately the amount. We know that in cases of gastric ulcer there is a condition of undue gastric acidity. A method has been suggested by Ewald to gain some light as to the motor power of the stomach. He has taken advantage of the new remedy, salol, which is a combination of carbolic acid and salicylic acid, and is not broken up into these constituent parts in acid media. It passes, hence, through the stomach as a whole; when it comes in contact with the alkaline secretions in the duodenum, it is there broken up into carbolic and salicylic acids, and the latter, or its salts, are absorbed and may be detected in the urine. This experiment is of value especially in cases of supposed gastric dilatation. Ewald's investigations led him to think that

salicylic acid can be detected in the urine one hour after the time of its administration. The speaker had administered the remedy in 50 cases, in 27 of which the reaction was obtained in one hour or less, in 13 in one to one and a half hours, and in 10 in one and a half to three hours.

These were cases in which the stomach was presumably in normal condition. He had also given salol in a few cases of gastric disease. In two cases of chronic catarrh the reaction was obtained in one hour, in one case two hours to three hours and twenty minutes; in a case of gastric dilatation, one and a half hours; in a case of cancer in one and a half hours, and in a second case of cancer in two and a half hours.

The time relation between the digestion of food and the taking of the salol had seemed to make a difference in the interval which elapses before the salicyl reaction is obtained in the urine. We are not as yet, certainly, justified in diagnosticating motor insufficiency whenever the reaction is delayed beyond an hour.

DR. OCTERLONY, of Louisville, had for several years made use of chemical analysis in the diagnosis of gastric disease. In no single case did the examination fail to corroborate the diagnosis. In malignant disease free hydrochloric acid was always absent.

DR. WHITTAKER, of Cincinnati, said: The subject of supreme importance is the question of the presence or absence of free hydrochloric acid as a sign of the presence or absence of cancer. It has been made plain already that the continued absence of this acid nearly always means cancer as distinct from ulcer, in which process the acid is superabundant, not only as a prime cause in the production, but also in the prevention of the healing of an ulcer. It is the hyperacidity of the stomach that makes the gastric ulcer so obstinate. But the main interest centres about cancer, and the first question that arises is this: Is the detection of the presence or absence of the free acid easy? If the fluid furnished for examination must be sent to a chemist for examination on every occasion, the whole subject becomes impracticable. But the truth is, any practitioner may make the examination himself with not much more expenditure of time and trouble than attends the examination of urine for albumen. It is essential to remember, first, that the fluid must be withdrawn seven hours after a meal of bread and meat. A healthy stomach empties itself of its contents in this time. A mere inspection will show any undigested matter left. Then, as has been properly insisted upon, the fluid should be withdrawn through the long, soft stomach-tube, which the patient soon learns to swallow with ease. Depression of the outer end of the tube makes a siphon of it so that sufficient fluid can be collected in a cup. Should the contents not escape with a light pressure over the stomach, the tube may be filled with water and a little suction applied. It is best not to use the stomach-pump, though it may be necessary at times. But the practical value of the test ceases when complications of this kind arise. The patient, properly instructed, furnishes the fluid to the physician on his visit, or brings it to the office, as he would a bottle of urine.

If the fluid be clean, as it is, as a rule, it may be coarsely tested with litmus paper, but far better with congo paper, which will detect the 0.0019 per cent. of free acid. This paper, dipped in the fluid, remains red in the absence of free hydrochloric acid, whereas it becomes, in its presence, lilac or blue in intensity corresponding to the amount of acid present. Lactic acid will also color it, it is true, but lactic acid under one per cent. much less intensely than hydrochloric. A deep blue color is always imparted in a hyperacidity, as from gastric ulcer, and a deep blue nearly always means hydrochloric as distinct from lactic acid. The execution of this test is the work of a minute. The evidence of it may be corroborated by the methyl-violet test, which is also short work. A few drops of the stomach fluid, filtered of course, if turbid, dropped into a test-tube containing a solution of methyl-violet, distinctly colored, changes the color, if free acid be present, distinctly to blue.

To decide absolutely between hydrochloric and lactic acids in a doubtful case, where coloration is not very decided or pronounced, it is necessary to resort to the test of Uffelman; two drops of liq. ferri sesquichloridi added to a four per cent. solution of carbolic acid, give this clear solution a steel-blue color. This solution is decolorized by hydrochloric acid, but is turned yellow by lactic acid. No other acid, acetic, butyric, etc., found in the stomach, has this property.

Now, if examination daily or every other day for a week or ten days shows the persistent absence of free hydrochloric acid, it is safe to conclude the case to be cancer. The evidence is actually more valuable than that furnished by a tumor. It is the most valuable single sign. There are exceptions, of course, but they are about as frequent as the exceptions connected with albuminuria, of which it is known, that while the presence of albumen does not necessarily imply it, and the absence of it necessarily exclude it, yet the persistent presence of albumen in the urine nearly always means Bright's disease.

The main difficulty in the experience of the speaker was to get the patient to furnish the fluid. Patients who come from a distance and want a diagnosis at once, cannot have the benefit of this test. A stay of a week or ten days is necessary for a proper examination. It is the first trial only that is difficult. After the first success with the tube, confidence is established and subsequent attempts are easy.

It is impossible to overestimate the value of this test in doubtful cases, and most cases are doubtful, and correspondingly great are our obligations to the gentleman who has come so far to bring this subject properly before us.

THURSDAY, MAY 10TH.

DR. J. MCFADDEN GASTON, of Atlanta, read a paper on

CEREBRO-SPINAL MENINGITIS.

His object in preparing the paper was to emphasize the great importance of recognizing the gravity of the situation at an early period, by the general symptoms indicative of congestion and not wait for indications of inflammation to determine the nature of the disease. He cited forty-five cases of meningitis, thirty-five of which were cerebro-spinal meningitis and the balance spinal meningitis, with the following results, eighty per cent. of the latter and forty per cent. of the former died. As to treatment, he thought that while the recourse to opiates has, in some cases, seemed to afford relief, it is evident that in most cases it only soothes the passage to the grave. There is an urgent demand for restoring the functions of the vital organs and rousing the nerve cen-

ters to action by revulsive applications externally and revolutionary measures internally.

Relying upon the special properties of a mixture of calomel and quinine, he has employed it for the purpose of jugulating the progressive development of the congestive stage of this disease. Hot mustard baths were applied to the lower extremities and cold to the head.

Mustard plasters may also be placed along the spine assisting in restoring the energy of the nervous system, together with mustard applications to the inner surface of the arms and legs. He cited cases in illustration and proof of the efficacy of this treatment, followed by the administration of salicylate of sodium and fluid extract of jaborandi.

DR. DIDAMA, of Syracuse, gave in detail five very obstinate cases of

HEMATURIA,

which, after resisting ordinary and extraordinary treatment for periods of from six weeks to three months, finally yielded, in the course of a week or so, to large doses of alum—five drachms, three times daily—or smaller quantities every three hours. He called attention to the importance of having the alum dissolved in a large quantity of water, and claimed that when so diluted —twenty grains to a goblet of water—it found ready access to the blood and urinary passages, and never produced constipation. Some of his cases had, under the care of the most eminent physicians, received the best known treatment without the slightest benefit. Alum had been used in some instances, but never in the large doses which he has employed with invariable success up to the present time.

DR. N. S. DAVIS had met with cases of persistent hematuria, so severe as greatly to impoverish the patient and endanger life. He reported a case of such a character, which could not otherwise be explained than upon the theory that there existed a defect in the influence of the vasomotor nerves over the vessels of the kidney. Acting upon this theory, he had used the remedies under which the patient recovered, ergotin on the one hand, in moderately full doses, and at the same time, the fluid extract of hamæmelis Virginicus. It is probable that alum, well diluted, so as not to create gastric disturbance, will pass through the kidneys in sufficient quantity to increase the tonicity of the kidney vessels.

DR. V. C. VAUGHAN, of Ann Arbor, read a paper upon the

ETIOLOGY OF TYPHOID FEVER,

presenting in detail his experiments with the Eberth bacillus obtained from drinking water, and the successful inoculation of dogs with the germ.

SURGERY.

TUESDAY, MAY 8TH.

The Surgical Section convened at 3 P.M., DONALD MCLEAN, M.D., of Detroit, *President*, in the Chair, and B. A. WATSON, M.D., *Secretary*.

DR. MCLEAN, after calling the Section to order, at once proceeded to deliver his address, entitled

SOME THOUGHTS ON RETROSPECTIVE AND PROSPECTIVE SURGERY.

Our generation has witnessed one of the most active and progressive eras in the history of that department of the medical sciences to which the attention of this Section is especially directed. It occurred to him that a concise and candid statement of some of the impressions made upon his own mind, and some of the conclusions at which he had arrived as the result of active experience, extending over a period of at least a quarter of a century, might not be altogether uninteresting.

The marvellous progress of surgery in our time is generally attributed to two great agents, namely, anæsthetics and antiseptics. But, with all due deference to these, it should not be forgotten that they themselves are only part of the fruits of a great general movement all along the line of the natural sciences, and that advances in anatomy, chemistry, physiology, histology, etc., have contributed in innumerable ways to the progress of surgery, and it is no more than just that the great army of able and enthusiastic laborers in these collateral departments should receive adequate recognition for the services which they have rendered, directly or indirectly, to surgery. Nor should the fact be overlooked that, even before the beginning of the present surgical era—that is, before the introduction of anæsthetics, and long before antiseptics were dreamed of, surgery was a great and a brilliant scientific art, and many of the principles and the methods promulgated and taught by our fathers, stand unchallenged and unchanged to this day.

It is a common thing to hear much if not all the credit of the wonderful advances in the surgery of the abdomen, the surgery of the articulations, the surgery of the blood-vessels, etc., given to Listerism, or antiseptic devices. The fact is, that *antiseptics without anæsthetics could have had but a comparatively insignificant field of usefulness:* and before attempting to decide or define the value of antiseptic processes let us try to do justice to some of the other factors in this interesting problem.

The introduction of anæsthetics vastly extended the bounds of modern surgery. It must not be forgotten that this great advance had attained considerable progress before the introduction of antiseptics, as is best illustrated in the history of abdominal surgery. Spencer Wells, Clay, Atlee, Peaslee, Dunlap, and Keith, had achieved world-wide fame as ovariotomists long prior to the advent of antiseptic surgery. It has been customary, or, perhaps, fashionable of late years, when a successful operation of a new or exceptional nature, such as resection of intestine, cholecystectomy, splenectomy, etc., is reported to claim the result as another argument or fact in support of antiseptic surgery.

Is it not just possible that too much importance has been attached to the influence of antiseptics and too little to the numerous other factors which enter into this complex and many-sided problem. All honor to Lister as the great apostle of surgical cleanliness, no matter what the ultimate fate of his theoretical views may be. Whatever the fate of the so-called germicides, like carbolic acid, bichloride of mercury, etc., may be, one thing is certain that anything like a return to the old, loose methods of conducting surgical operations and of dressing surgical patients is absolutely impossible, and for this the world will always feel grateful to Joseph Lister.

With reference to anæsthetics, he found himself irresistibly forced to the conclusion that upon the whole for all general purposes, chloroform possesses superior advantages. His own experience has led him to believe that when carefully administered in suitable cases it is little, if at all, more dangerous than other anæsthetics, and its

advantages in other respects are too well known to require illustration. Fortunately, in the progress of surgery in late years, local anæsthesia by ether spray, cocaine, etc., has been found to constitute an efficient and altogether safe substitute in a large field of minor, though painful operations.

Much was hoped from the microscope as an aid to the diagnosis of different kinds of tumors, and for determining the prognosis in relation to the return, or the danger of general infection of the system. He could not persuade himself that it has added much, if anything, to our resources. In certain departments of practical medicine, as in the examination of the urine, it is invaluable; but to the ordinary practical surgeon its use has not equalled the expectations of its early enthusiastic advocates.

Electricity has, when used for suitable purposes, demonstrated its right to the respect and gratitude of the profession. Much harm has been done and much unfair prejudice has been excited against this useful agent by the absurd and extravagant claims which have, from time to time, been made in its behalf as the result of inaccurate observations or unscientific deductions, and there is reason to fear that this kind of obstruction to the proper recognition of electricity as a surgical agent has not yet entirely ceased.

The applicability of electrolysis to urethral fistulæ of long standing was made a subject of especial consideration, as was also its effect upon the growth and tendencies of uterine fibroids, as supported by Apostoli, Keith, and others.

With regard to the treatment of aneurisms, he believed the revival of the old operation of Antyllus in certain suitable cases, and the restriction of the Hunterian operation to a somewhat more limited field of usefulness, a striking and interesting improvement, for which the credit is mainly due Professor Syme.

The recently promulgated view that an artery may be securely ligatured by a broad animal ligature, without rupture of any of its coats and without the formation and organization of the classical coagulum, was pronounced, if true, the greatest discovery relative to the surgery of the arteries which has been made in our day. Such a revolutionary doctrine, ought, however, to be accepted cautiously, and after careful observations *on the human subject*. A few personal observations favoring this view were reported.

The treatment of diseased joints has made solid progress in recent times. Those intractable cases, to the pathology of which Sir Astley Cooper devoted so much attention and which he unsuccessfully endeavored to cure by different forms of counter-irritation and constitutional treatment, are now successfully managed by rest, pressure-extension, and counter-extension, and especially by the operation of resection or partial resection. The latter operation was especially valued.

In the treatment of fractures, he preferred the Gurdon Buck method now so generally employed. He preferred a splint made of folded newspapers surrounded by a roll of cotton wadding. The treatment of Colles's fracture without splints is an advance. The sprain of the neighboring joint should be considered the important factor in the case, and immobilization is everywhere contra-indicated in sprains. The treatment of non-united fractures was also considered.

He closed with a consideration of the operation for the removal of urinary calculi, expressing preference for the cutting operation as being more certain of success and much less liable to be followed by recurrence.

DR. HENRY H. SMITH, of Philadelphia, read a paper on

THE APPENDIX VERMIFORMIS; ITS FUNCTION, PATHOLOGY, AND TREATMENT.

In writing of intestinal obstructions, he said, Mr. Treves states that "their importance may, in one way, be estimated by the circumstance that over 2000 individuals die every year in Great Britain from obstructions of the bowels, exclusive of hernia." Dr. Senn, of Milwaukee, also considers them of such importance that during the last eighteen months he has reported one hundred and fifty operations performed on animals for the purpose of studying the principal varieties of intestinal obstruction produced artificially. Treves does not state what proportion of the deaths he speaks of were due to disorders of the appendix, and Dr. Senn's experiments have not been extended to this tube. It is, however, widely known that the appendix is sometimes a cause of constriction of the ileum, and that stenosis of its cæcal orifice, from inflammation of its coats, or concretions, or foreign bodies in its canal, frequently induces local and general peritonitis, pericæcal abscess, or perityphlitis. Whether the starting-point of the latter is in the appendix or in the cæcum, is still *sub judice;* but there is much evidence to show that it is in the appendix in the United States.

He next considered the special anatomy of the appendix. In man it varies from two to nine inches in length, about as broad as a goose-quill. It is generally slightly flexed, is sometimes adherent to the left and posterior side of the cæcum, and extending up nearly to the gall-bladder. Its blind extremity points toward the spleen, though it may dip into the pelvis and become adherent to the right broad ligament or ovary. When it occasionally becomes attached to some other organ and wound around the cæcum, it may cause strangulation. At the base, the appendix opens obliquely into the posterior and inner, but not the lowest point of the cæcum. The mucous coat and submucous tissue are well developed; a semilunar fold opposes the passage of solids into the appendix. Such entrance is forced mainly by straining or vomiting. Sometimes there is a second deeper, valve-like projection. Gerlach states that, in elderly persons, these valves are shrunken and atrophied, and this is the reason that perforation from the pressure of concretions is unknown. Perityphlitis is rare after forty; Bauer states that typhlitis is most common between sixteen and thirty-five. Appendicitis is mostly met with before forty-five.

The coats of the appendix are the same as those of the intestine, but the longitudinal fibres predominate, their action tending to force its contents into the cæcum. The follicles of Lieberkühn are abundant; Peyer's agminated follicles are also present; Brunner's glands are not beyond question.

The function of the appendix is yet doubtful, some question its importance, as it is found in but six animals. Morgagni, John Hunter, Meckel, Haller, and others, report cases where the appendix was wanting in man, and attach little importance to it. A recognition of its function in health would, however, be of importance to our treatment

of its diseased conditions. That the appendix exercises some influence on the action of the cæcum in digestion is probable, as its mucous coat differs quite materially from that of the cæcum and colon in the arrangement of its capillaries and crypts. Whatever be its function, the mucous membrane of the appendix is certainly liable to catarrhal inflammation, leading to stenosis, accumulation of secretion, distention, ulceration, and perforation, and finally peritonitis, with accumulation of pus and abscess in the right iliac region, especially in the loose connective tissue around the cæcum, a symptom often spoken of as perityphlitis. As surgeons, should we not strive to overcome the early constipation, and the restoration of the bowels, by emptying the cæcum, and favoring increased peristalsis; or, when this fails, promptly overcome the obstruction by an operation?

He then considered the pathological conditions to which the appendix is liable, malformations, misplacements, occlusion by foreign bodies, ulceration, perforation, inflammations, etc., with the numerous consequences upon itself or other organs. Tuberculosis sometimes attacks the glands of Peyer in the appendix. The stenosis of the canal with retention of the secretion not infrequently results in the formation of a calculus, the nucleus of which may be a speck of hardened feces around which the mucus collects, receiving in addition a deposit of phosphate or carbonate of lime.

The symptoms of appendicitis are in the beginning those which indicate a disturbance of digestion, the disease appearing without premonitory symptoms, with griping, vomiting sometimes severe. The pain may be preceded or followed by vomiting, first mucous then stercoraceous. The right thigh is sometimes flexed. The attack may be a single severe prolonged one or may remit. The belly may be tympanitic with variable flatness in the right side, sometimes more prominent than usual; sometimes a tumor is palpable.

The diagnosis, usually difficult, may, when early sought, be arrived at from due consideration of the history, by palpation, revealing imperfect induration in the right iliac region with pain, when the temperature and pulse permanently rise and there are symptoms of peritonitis. Even a diagnostical laparotomy often leaves the patient in a better condition when an appendicitis is neglected.

The prognosis is always grave and the result uncertain.

Under the head of treatment the speaker insisted upon the importance of an early recognition of the condition and the following out of the preliminary treatment such as would be directed to an intestinal catarrh, the administration of five grain doses of calomel, until twenty or thirty are taken, morphia hypodermatically to relieve pain, and a dose of sulphate of soda or magnesia. This in the early stages before perforation is supposed to have occurred. The patient should be etherized for careful palpation. A delay in operating for appendicitis, as in hernia, decreases the chances of recovery.

DR. THOMAS G. MORTON, of Philadelphia, next read a paper on

THE DIAGNOSIS OF PERI-CÆCAL ABSCESS AND ITS RADICAL TREATMENT BY REMOVAL OF THE APPENDIX VERMIFORMIS.

Abdominal surgery can show many brilliant achievements under modern antiseptic methods, but in scarcely another instance does an operation afford its own justification, or when properly timed present such satisfactory results as laparotomy when performed for suppurative appendicitis.

Under the head of pathology and clinical history, the speaker said that it would greatly simplify the subject under discussion if we can first clear up the nomenclature, which it would seem has been greatly confused by the refinements of pathologists and others. We are accustomed to certain distinct terms to express inflammation of the cæcum, of its peritoneal investment, and of the surrounding structures and cellular tissue.

It would seem reasonable that all the niceties of diagnosis between typhlitis, perityphlitis, paratyphlitis, and pericæcal abscess can properly be set aside as without real practical value; since recent pathological researches have demonstrated that as a rule in cases presenting the well-recognized characters of typhlitis, the symptoms are almost invariably due to appendicitis. Exceedingly rare are the cases in which the cause resides in the cæcum. Pericæcal abscess may then, in most cases, be said to mean disease of the appendix vermiformis.

It seems hardly worth while to consider the conventional division of appendicitis into the catarrhal and the ulcerative; for clinically speaking, although an uncomplicated catarrhal condition may exist, there are ordinarily no signs by which it may be recognized.

Inflammation and perforation of the appendix, in most cases, very probably in all, is due to irritation excited by the presence of a foreign body in the organ. It has been shown that the foreign body is commonly a fecal or a phosphatic concretion, or an aggregation of small bodies which have from time to time gained admittance, or the concretion may be composed of epithelium or other constituents aggregated into a hard mass from the ordinary secretions of the parts.

No complete or fully satisfactory classification of the cases of inflammation, perforation, and abscess of the appendix can probably at this time be made; but for practical purposes, a division according to the onset and history of the disease, into the acute and chronic varieties, will probably fulfil all necessary clinical requirements.

In the acute disease the symptoms come on with suddenness and increase in severity, often very early presenting grave characters. Occasionally the disease progresses from first to last, with frightful rapidity, so much so that the patient rapidly enters a condition bordering on collapse. Possibly the extremely acute cases might afford an opportunity for a still further division into the acute and the supra-acute; the latter cases running their course in a few hours.

The close proximity to the peritoneum of such fetid pus as is found in suppurative appendicitis produces very early unusual depression and exhaustion.

In the chronic forms of appendicitis we have recurring attacks or relapses. These are often followed by deposits of lymph which forms a barrier more or less complete, sufficient when perforation takes place to protect the peritoneal cavity at least for a time. But if operative measures are not undertaken or are unduly delayed, such lymph partitions often yield, and the general peritoneal cavity becomes involved and peritonitis results. In other cases, the abscess walls form a distinct pus cavity which surrounds the organ so that when perforation occurs gas and pus form a tumor, of more or less defined

hardness. Such tumors frequently make their way toward the surface, and the superimposed structures become infiltrated and markedly œdematous. In such cases the perforation of the appendix may remain open and a fistule form between the bowel, the abscess cavity, and the external abdominal surface. Several cases of appendicular disease were reported.

As a provisional classification of the diseases of the appendix the author offered the following:

1. Those cases where the appendix and its surroundings become encysted by deposits of lymph, so that a cavity more or less complete is formed, into which the contents of the appendix are received when perforation occurs, while the walls of the cavity afford possibly a complete separation partition which separates it from the peritoneal cavity. These cases are likely to be chronic in their course.

2. Those cases in which an insufficient limiting partition wall has been formed and where the general peritoneum promptly becomes involved. Appendicular ulceration and perforation has been so rapid that sufficient lymph for the production of a partition wall has not been thrown out. This group furnishes the acute cases.

The symptoms of the disease were much the same as those described by Dr. H. H. Smith.

In the author's opinion many attacks of so-called colic are but contractions of the appendix in its efforts to expel foreign bodies so often present.

Actual perforation of the appendix is generally ushered in by intense, excruciating, agonizing pain, which is sometimes relieved by the occurrence of the accident.

Treatment.—He divided the treatment into that of the pre-purulent and that of the post-purulent or suppurative stage. The treatment of the former stage should consist of rest in bed, restriction of diet to nourishing liquids, hot poultices or fomentations frequently replaced upon the parts, perhaps local depletion and the hypodermatic administration of morphia to control pain. The bowels should be kept open and free from the accumulation of gas or feces by the administration of saline laxatives and enemas, perhaps with the administration of turpentine with the latter. Intense pain is as often an indication for operation as for the administration of morphia. Long continuation of the symptoms, or relapses would be strong indication for surgical interference. Tedious recovery, relapse, or recurrence points to danger to the patient from liability to general peritonitis or perforation at any time. They would point further, as a rule, to the appendix as the source of irritation and danger—indeed, in man that worse than useless appendage must be regarded as the root of most evil in the region under consideration. After suppuration operative measures are demanded. Many risks are to be taken rather than those of purulent peritonitis. Later all available diagnostic skill must be exerted to detect a pericæcal abscess, should it point in an anomalous situation. We must ever bear in mind the surgical rule always to attack pus at its source, if possible.

The Operation.—On account of the nature of the case there is rarely any opportunity for preparatory treatment for the operation. Asepsis should be rigidly observed at the time of the operation. The aspirating or exploring needle should never be used for exploring purposes; it is dangerous. The patient supine and extended, the field of operation is thoroughly cleansed, shaved, and washed with bichloride solution 1 : 1000, and finally with ether. The line of incision is slightly oblique or vertical and lateral. The lateral incision can be made of less size and directly over the appendix. It has many other advantages. It should begin at a point about an inch above Poupart's ligament and to the outer side of the right linea semilunaris, to be continued upward in a vertical direction or outward and upward and carried down until pus, cæcum, or peritoneum is reached. From numerous dissections, the speaker had found that the appendix is normally placed immediately under a point two inches distant from the right anterior superior spinous process on a horizontal line drawn from this process toward the median line of the body.

When the abscess cavity is reached gas is usually first discharged. The wound can then be enlarged, if necessary, in order fully to expose the cavity underneath. Irrigation, with boiled water at a temperature of 105° to 110° and careful sponging, now permit a clear view of the surroundings of cæcum and appendix. The latter is usually the seat of trouble. It would be well to excise it in any case whilst we have the chance; for any cæcal trouble would be likely in time to excite trouble in the appendix. Without a doubt it should be so treated if found inflamed, perforated, or harboring foreign bodies. This can best be accomplished by ligaturing it as close as possible to its cæcal attachment, with a strong silk thread, and cutting it off beyond the ligature. Cæcal perforations, if found, should be cleaned and curetted and then closed with Lembert's suture; even ulcers which have not perforated might thus be turned into the bowel lumen. If the general peritoneal cavity has not become involved, the walls of the abscess should be gently curetted, washed with a mercuric solution, 1 : 1000, and a large drain carried to the bottom of the wound and brought out at its most dependent part. The external wound should, with the exception of a suture or two, be left thoroughly open and lightly filled with an antiseptic dressing. A rope of absorbent cotton should be placed in the glass tube, a large mass of cotton should cover the abdominal and wound surface. A four-tailed bandage completes the dressing.

If the general peritoneum has become involved, the entire abdominal cavity must be washed out with hot distilled water, temperature of 105° to 110° F. or bichloride of mercury solution 1 : 10,000. The intestines should be cleansed with a sponge, and a foreign body, if that has been the cause of the trouble, searched for. Should peritonitis be far advanced, the intestines must be withdrawn and all adhesions separated with the finger or knife. During the process of cleansing and before they are returned to the abdomen, they should be carefully protected with towels wrung out of hot water. In all cases of general peritonitis a glass drainage tube must be carried to the bottom of the pelvic cavity and kept in working order by ropes of absorbent cotton which act by capillarity. Should the cause of morbid action be impaction of feces or a foreign body, in the cæcum itself, they must either be excised or urged along the bowel by prudent force. It can properly be said that there is no fixed time for operation in cases of pericæcal abscess. When symptoms strongly indicating the presence of pus are seen it is far safer to operate at once than to wait. Delay is prognostic of the gravest consequences to the patient, the prognosis growing worse every hour that the operation is postponed.

The after.treatment resolves itself into the relief of pain and keeping the wound open and in a thoroughly clean aseptic condition. The rules of abdominal surgery govern the treatment.

DR. J. MCFADDEN GASTON, of Atlanta, read a paper on

THE APPENDIX VERMIFORMIS; ITS FUNCTIONS, PATHOLOGICAL CHANGES, AND TREATMENT.

He first reviewed the anatomical characters of the organ in much the same manner as those who just preceded him. He did not regard it as a safety valve for the cæcum, but rather as a loop-hole for the entrance of matters prejudicial to it and the adjacent structures. He thought also that the appendix performed an active part in the production of the fecal odor, without, however, supporting his view.

He reiterated a former statement that he could not acquiesce in the view of pathologists which attributes the degeneration of the cæcum and appendix to a low state of vitality in their tissues, but on the contrary he held that they are highly vitalized and that it is from being overtaxed in the performance of functions connected with the excrementitious process that they are so subject to disease. Although looking upon the appendix as worse than useless, as already stated, the author held a very different view of the harmlessness of its removal, since in dogs experimented upon by himself, the operation was generally followed by death, from shock, within twenty-four hours; whereas, removal of the ileum was followed by no such untoward symptoms. Under the head of treatment nothing was added to what had been stated by the previous essayists.

WEDNESDAY, MAY 9TH.—MORNING SESSION.

DR. JOSEPH RANSOHOFF read a paper on

THE CÆCUM AND APPENDIX; THEIR RELATIONS TO HEALTH AND DISEASE.

DR. S. L. MCMURTRY, of Danville, Ky., followed with the report of

A CASE OF TYPHLITIS WITH PERFORATION; LAPAROTOMY; RECOVERY,

Occurring in a young physician, who for several months had suffered from occasional attacks of colic, not severe but coming on without warning, attended with nausea and vomiting, and attributed to indigestion. The intensity of the pain with its location, excited suspicions of renal colic in the minds of his attendants. Morphia was administered freely, and laxatives for the constipation which existed. January 23d, a slight almond-shaped induration was first detected, dull to percussion. The induration increased until it became an oblong, sausage-shaped tumor in the right iliac fossa. There was moderate fever. On the evening of January 26th hemorrhage of the bowels began, thirty-two ounces of blood being passed. Hiccough was added to the other symptoms, which, with increased frequence of the pulse, tympanites, and serious vomiting established the diagnosis of cæcal or pericæcal inflammation. On the morning of the 27th, cold perspiration, rapid pulse, and cold extremities were interpreted as signs of perforation and impending collapse.

When he saw the case on the morning of the 27th, the patient was in the condition just described, with frequent vomiting of green serous fluid, characteristic of peritonitis, and bloody stools. The tumor, distinct in outline, was readily recognized as the caput coli. Immediate operative measures were determined upon. The lateral incision immediately over the tumor was made under thorough antiseptic precautions. The peritonitis was found to be limited, but recent, severe, and bearing evidences of spreading. The vermiform appendix was normal. Upon the anterior and external surface of the cæcum were two gangrenous perforations, one somewhat larger than a twenty-five cent piece, the other a little larger than a ten cent piece; both black and round in shape. The larger was complete, the smaller scarcely so. With the scissors the edges were trimmed off, the rents closed with five and three silk Lembert sutures respectively, passed beneath the muscular coat but not into the mucous. The toilette was made with scrupulous care. Immediate improvement followed, and the recovery was complete.

At the close of his report, he briefly reviewed the history of the operation he had performed, as well as that of affections of the cæcum. With reference to the time for operation, he said that when pus forms in the retroperitoneal tissue and is making its way toward the surface delay may facilitate its access by allowing the peritoneum to be pushed aside; but this advantage does not counterbalance the benefits of an exploratory incision, which should be resorted to as soon as grave symptoms suggest it. The aspirator is unreliable and unsatisfactory as an exploratory means in these cases and its use is attended with danger of peritoneal infection. The exploratory incision is much more free from danger and more satisfactory. As soon as the diagnosis of intraperitoneal inflammation is made, abdominal section should be performed. To wait, administering opium, is neither conservative nor surgical. In the case reported, the speaker thought the success due to the early recognition of the lesions by the gentlemen in attendance, and the prompt acceptance of the proposed operation by the patient.

DR. ANDREWS, of Chicago, objected to the too speedy resort to laparotomy in these cases. He reported a case, somewhat similar in character to that reported, in which he had performed the operation, but only after a fecal fistula had formed. It was a perfect success so far as the operation was concerned; not, however, preventing the patient from succumbing to Bright's disease a short time after.

DR. S. W. GROSS, of Philadelphia, remarked with reference to the propriety of performing laparotomy in cases of perforating appendicitis, cæcitis, etc., that there are cases in which the abscess points posteriorly and opens behind the cæcum. Of course, no surgeon would think in a case like that of opening the abdominal cavity. But he thought that in all cases in which there is perforation of the cæcum no surgeon will wait very long before he does laparotomy. We are liable at any time to meet with a case of walking typhoid; intense pain is felt in the iliac region, which pain is circumscribed. There are elevation of temperature and increase of the pulse-rate. In such a case he would not hesitate to lay open the abdomen. He would not wait for any other symptom to appear. He would infer that perforation had

occurred and that the symptoms were the general symptoms of peritonitis. He thought that if we neglect these cases the patients will almost certainly die; and on the other hand that if we operate we will almost surely save them.

DR. NELSON, of Connecticut, reported a case of a young man who had been sick about ten days, pulse 100, temperature about 100° F.; skin dry, sallow and dusky; tongue somewhat coated. He had some pain in the right iliac region. A tumor presented, which showed evidences of pointing in two or three places. He aspirated, found pus, evacuated it and the patient had no further trouble. He thought the case has important bearing on the advice to operate in all cases and early. He reported also another case in which there was a spontaneous evacuation of a large quantity of fetid pus, followed by a relief of symptoms resembling those of perforating appendicitis. There is a certain degree of danger, he said, in these operations that we open not only the abdomen, but also the intestine, and he thought there was some danger of a fistulous opening remaining, although he could not recall such a case. He did not recognize so great an amount of danger associated with the introduction of a needle as belongs to the making of an incision with the knife.

DR. WEEKS, of Maine, remarked that the point of importance is the line of incision in the cases in which laparotomy is indicated for perforation of the appendix and cæcum. There exists to-day a doubt as to the best point of incision. From his own experience, particularly that obtained from several cases seen within the last few months, he expressed a preference for the incision directly over the cæcum, by which the operator comes directly upon the seat of trouble. With reference to the point at which the cæcum may be found, he regretted that the anatomies and surgeries are so obscure. The incision should begin one inch inside and about two inches above the anterior superior spinous process.

DR. DIXON, of Kentucky, reported a case in which he had operated last February, by the lateral method. He found a cavity filled with fetid gas and pus, and in the bottom of it a large perforation of the intestine. After cleansing the cavity as thoroughly as possible and ligating the appendix, until then following as nearly as possible the rules laid down by Smith, the incision was closed by Lembert's suture, a drainage tube being left in the opening.

DR. H. H. MUDD, of St. Louis, remarked that the difficulty here, as in all cases of abdominal operation for obstruction, is in the diagnosis and the determination of conditions which demand, or do not demand, operative procedure. Ileo-cæcal obstruction affords almost as good an opportunity for diagnosis as any abdominal condition that we have. We have three sources for the formation of a tumor in this region, the accumulation of feces, the accumulation of gas, and the infiltration of serous fluid about the walls of the intestine. Now if we have symptoms of obstruction preceding the final development of a tumor, we have something to guide us, and if supervening upon this we have a sudden acute attack of pain, which is persistent, which is accompanied by increased distention, which is accompanied by the usual symptoms of perforation, then we have conditions which favor operative procedure at once. But if we have developing slowly with these symptoms, a tumor, it may be the result of infiltration of serum in the cellular tissue, then we have a condition in which we should wait for some time. He had seen a number of those cases recover by simply watching, and he had seen others get well after a laparotomy.

He reported also a case of abscess in the lumbar region from which a lumbricoid worm escaped, followed by speedy recovery. He had seen a case last week in which he made a laparotomy under rather unusual circumstances. The patient had had recurring attacks of pain; had been in the hospital eleven weeks with symptoms of obstruction, presenting a tumor a little to the right and near the median line. Folds of the intestine overlay the tumor, and it was possible to hear the gas and fluid gurgling upon palpation. Rectal examination revealed a soft tumor and fluctuation was easily elicited. He thought he had an extra-peritoneal tumor. He made a laparotomy and found a large abscess in the peritoneal cavity, opened it and drained it. The post-mortem, three days after, revealed these conditions: The colon and a loop of the small intestine were in process of uniting, the colon being in front of the tumor. Three inches of small intestine surrounded this mass held down in the pelvic cavity, their lumen being obliterated by the distention of the abscess and the pressure caused by this abscess, which had been occasioned by a long-continued perityphlitis and appendicitis. At no point did he think that this abscess could have been reached without perforating the intestine itself. The question which had troubled him most, and he thought it a practical question, was: Have we or not in perityphlitis, typhlitis, appendicitis, etc., a better chance to interfere after suppurative peritonitis has developed? We may be able to determine that we have a local peritonitis, but do not know whether it is suppurative or not, and the question arises, Does our patient have a better chance for recovery after it has become suppurative? In regard to the incision, he was not so sure that the inguinal region is the best line. In many cases it will answer, but not as a rule, because there is no part of the intestine so frequently displaced as this one.

DR. J. MCF. GASTON, of Atlanta, inquired whether the cæcum was seriously involved in the trouble, because he considered this quite different from mere perforation and extravasation into the peritoneal cavity. He did not understand whether there was, in this case, any precaution against permitting the fecal matter to gain access to the peritoneal cavity. If feces had thus passed into the peritoneum, it would be highly proper thoroughly to wash out the cavity.

DR. MCMURTRY replied that his was a typical case of perforative peritonitis. This was a case of septic peritonitis, arising from the perforation. Peritonitis is a septic disease. Of course, it was a case of infective peritonitis from the infection that was in the bowel. It seemed to him that confusion had entered the discussion from the fact that no distinction had been made between laparotomy and the opening of an abscess. If you have perforation, and an abscess forms in the tissue, opening that is not laparotomy.

DR. J. PRICE, of Philadelphia, opposed the use of the aspirator and trocar. With them we make a small opening, drain off the accumulated matter, but see nothing. Surgeons who have had no training have naturally some fear of laparotomy. We have, however,

learned to regard it as an operation which is attended with comparatively little danger. At present there is nothing so simple as dealing with pus. He had no fear of deluging the peritoneum with pus. With regard to diagnosis, he stated that he would prefer to depend upon the diagnosis made by the general practitioner, than that of a surgeon, in affections of this region.

DR. E. M. MOORE, of Rochester, stated that he had listened to the papers with intense interest, but he had failed to hear one or two things which come within the experience of every surgeon. Now, is it not the experience of every one to have cases of what used to be called perityphlitis—attacks of pain in the right side, coming on day after day and getting well, and the rule is that they get well? He had seen it over and over again, and his experience has always been that if the inflammation was sufficiently local it was sure to get well. Did he understand Dr. Price to say that the operation of cutting into the peritoneum is absolutely free from danger? He must confess that he was utterly astounded! He had heard it stated that immunity pertained to diagnostic laparotomy, but that was not stated here. He then referred briefly to the differentiation of phantom and other tumors of the abdomen from affections of the cæcum, and concluded with the statement that he had not found the operation of laparotomy so innocent as it is claimed by some.

DR. MCLEAN, of Ann Arbor, remarked that it seemed to him bold to say that the peritoneal cavity can be opened with impunity. It would be a mistake to permit the dictum to pass from the Surgical Section of this Association that the abdominal cavity can be opened with perfect safety.

AFTERNOON SESSION.

DR. R. HARRY REED, of Mansfield, Ohio, read a paper on

INTESTINAL OBSTRUCTION IN ITS SURGICAL ASPECTS.

The aim of the paper was to prove by the presentation of cases, that pseudo and "veracious" obstruction of the bowel exist, both ante-mortem and post-mortem. A number of cases were reported, in each of which he had elicited all the ordinary symptoms of intestinal obstruction, and yet in not a single case was there any real obstruction. Two of the cases were not relieved by surgical interference, and collapse and death were the termination.

GENERAL BUSINESS.

DR. S. W. GROSS moved that hereafter, when titles of papers to be read before the Section are forwarded to the Secretary, they shall be accompanied by a set of conclusions drawn from the paper, and that in case this requirement is not complied with, the title of the paper shall not be published as a part of the programme.

Adopted.

OFFICERS FOR THE ENSUING YEAR WERE ELECTED AS FOLLOWS:

President.—N. P. Dandridge, M.D., of Cincinnati, Ohio.

Secretary.—W. O. Roberts, M.D., of Louisville, Kentucky.

DR. CHARLES B. PENROSE, of Philadelphia, presented a paper on

INTESTINAL OBSTRUCTION IN ITS SURGICAL ASPECTS.

Surgical operations are necessary in intestinal obstruction for two purposes—for diagnosis and for treatment. The inefficiency of the treatment now generally employed is shown by the mortality following obstruction. This is a mere mechanical occlusion of the alimentary tract, which, theoretically at least, is always amenable to some form of treatment. The mortality of all kinds of acute obstruction is nearly one hundred per cent. when treated by medicinal means alone; and according to Rockwell's table, published in the *Annals of Surgery* for February, 1888, the mortality in all cases of intestinal obstruction which were submitted to operation, between the years 1877 and 1887, was forty-six per cent. The mortality after medicinal treatment is due to the inability of drugs to overcome the mechanical occlusion, and the high mortality after surgical treatment is due to the too great delay of the operation, which also renders laparotomy for intestinal obstruction more fatal than the same operation for other cause. Enterotomy and colotomy once frequently resorted to, are now rarely employed for intestinal obstruction. They are safe operations, and generally empty the intestines; they do not, however, relieve the obstruction. They are made in the dark; the opening may be made below the obstruction; the jejunum may be caught and the patient perish from inanition; a gangrenous loop of intestine may be left in the abdomen, or a cancerous mass, and cause death. As primary operations they are rarely demanded.

He preferred the median abdominal incision in laparotomy for obstruction, owing to the liability to anomalous intestinal localization, the difficulty of locating the obstruction, and the possibility of multiple obstructions. One of the most useful guides to the operator, in his search for the obstruction, is the finding of a loop of the intestine which is more congested and darker than its neighbors. The distended loop should be followed from the stomach toward the rectum. Collapsed loops of intestine will also lead in the opposite direction to the obstruction. These signs failing, the systematic search should be begun; hernial pouches being usually first examined.

The various methods for relieving the obstruction were next reviewed. The formation of an intestinal anastomosis, an old method recently brought into notice by Senn, has been performed but twice on man, with fatal result. The improved technique introduced by Senn promises to bring it into successful application. If an obstruction cannot be relieved or resected, an artificial anus must be formed. The operation of resection of intestine was briefly described, as performed by Treves. The production of an artificial anus, after resection, was carefully described. With reference to the operation, the speaker said that he admitted that an artificial anus is a misfortune to be avoided if possible, and that the ideal method, in case of obstruction, where resection was necessary, is immediately to restore the continuity of the intestine; a procedure not always attainable. He did not think that improved technique would ever do away with the production of an artificial anus. The method of closing an artificial anus was next described by the essayist; then the closure of the external abdominal incision.

Referring to the production of artificial anus, for ob-

struction, he said that its value is so great that he would urge its use not only for the peritonitis and distention following strangulation of the intestines, but also in peritonitis or intestinal paralysis of any other origin where there are great abdominal distention and fecal accumulation. Continual irrigation of the peritoneum, its application, and the method of its performance were made the subject of especial consideration.

In conclusion, he asked attention to the following points:

The use of an exploratory laparotomy in cases where the diagnosis of intestinal obstruction is doubtful. The necessity of early operation in the treatment of this condition. The necessity of a temporary artificial anus after resection for obstruction. The value of a temporary artificial anus as a means of avoiding subsequent obstruction when there has been great abdominal distention and fecal accumulation. The value in some cases of continued irrigation of the peritoneal cavity.

DR. N. SENN, of Milwaukee, then read, by abstract, a paper on

RECTAL INSUFFLATION OF HYDROGEN GAS AS AN INFALLIBLE DIAGNOSTIC MEASURE IN THE DETERMINATION OF PERFORATION OF THE INTESTINE, ETC.

(See page 569.)

During the reading of his paper, he made three experiments in demonstration of his method of determining the presence of intestinal perforation. In the first, a dog was thoroughly anæsthetized, hydrogen gas was then made to enter the bowel through the anus by being forced from a four gallon balloon through a rubber tube attached to a nozzle like that of the ordinary fountain syringe. A weight equivalent to about one hundred and fifty pounds was placed upon the balloon. A second tube was passed into the œsophagus, and in an incredibly short time the hydrogen escaping from the œsophageal tube was ignited from a spirit lamp, demonstrating that the gas had been forced through the entire length of the alimentary canal. The second experiment was also made upon a dog thoroughly anæsthetized. An incision was made in the abdominal wall a little below and external to the umbilicus; a loop of intestine, the small intestine, was withdrawn and an incision made into it and the bowel returned. The hydrogen was then forced into the rectum, and in a very short time was ignited as it escaped from a tube inserted into the abdominal wound. Finally, the same demonstration was made upon a dog, under anæsthesia, after receiving a pistol-shot wound perforating the intestine. Each of the demonstrations was a perfect success.

NEW YORK NEUROLOGICAL SOCIETY.

Stated Meeting, May 1, 1888.

THE PRESIDENT, GEORGE W. JACOBY, M.D., IN THE CHAIR.

DR. LEONARD WEBER presented a paper upon

PARALYSIS AGITANS, WITH CASES.

The disease had been first described by Parkinson in 1817. Charcot had differentiated it from disseminated sclerosis. Progressive tremor and muscular weakness affecting first one limb and subsequently spreading to other limbs were its chief symptoms. According to Charcot, the head was always respected. There was apparent diminution of muscular force, and in well-advanced cases movements were slow and uncertain. There was loss of the faculty of equilibrium. In trying to walk the patient would run, appearing to be running after his lost centre of gravity. There was bending of the body to a stooping posture and an immobile facial expression with a fixed stare. Death occurs from marasmus or intercurrent disease. The onset was insidious, a hand, a foot, or even a thumb had been first affected. The crossed form was rare, and the hemiplegic form was more common than the paraplegic. Charcot referred to cases in which pain had been the first symptom, tremor following later on. Deglutition was not interfered with, the bladder and rectum but seldom. There might be annoying cramps, but contractures did not occur. Deformity might be present, giving to the hands the aspect of arthritis deformans. Glycosuria had been noted. This complication had been present in a case of his own. In an advanced stage there was disturbance both of thought and action. Neuralgias were present with a sense of fatigue and restlessness, requiring frequent change in position. There was a subjective feeling of heat.

Marked melancholia or general hallucinations may be present with even maniacal attacks. Remak had differentiated a cerebral and spinal form. In two of his own cases cerebral, and in two others spinal symptoms had predominated. Nothing definite to account for the tremor had been found in either the brain or cord. It is a disease which affects the lower strata of society particularly, and men rather than women. It is a disease of advanced life, though Meschede has reported a case in a boy of twelve years, where it had developed after a kick in the face by a horse; and Duchenne one in a man of twenty. It is said to be more frequent among English and American people than among those of other nations. Powerful emotional and moral shocks have produced it, also irritation of the peripheral nerves by traumatism. Prolonged damp cold is a cause; also, in the reader's opinion, sexual excess. The reader had not observed that syphilis had anything to do with its production. Heredity is said not to be a factor, but in one of his own cases the patient's father and two brothers, and in another one brother, had been affected.

Arsenic, ergot, and nitrate of silver have no retarding action. The comfort of the patient may be increased by using Brown-Séquard's bromide mixture, leaving out the iodide of potassium. Hyoscyamine had not been of any value in the reader's experience, producing head symptoms and even maniacal attacks. He had used the amorphous preparation in one-tenth grain doses. Antipyrin in fifteen to twenty grain doses gave rest at night in some cases; chloral, too, had been useful, but the effect of both had been transitory. He had found paraldehyde superior to either as a hypnotic in these cases. It was given in emulsion, fifteen to thirty grains to a dose. It did not affect the stomach, did not weaken the heart, and did not lose its efficiency by use. The galvanic current relieves the feeling of fatigue. Tepid half baths with cold affusions to the head and spine are even more effective and prompt. The reader has had twelve cases, five of whom had been under his

care sufficiently long for study. He briefly referred to these cases.

Case I. was a man of seventy years, in whom the disease had existed for twenty-four years. The patient is still able to get about. The disease was produced by cold.

Case II. was a woman of seventy years, first seen by the reader in 1884. This patient was a very cultivated lady, with fine intellect, and a great knowledge of men and affairs. The disease dated from 1876, and an occasion upon which she had received news of the illness of a loved daughter. The expression of face in this case was markedly sad and immobile. There was little neuralgia, no spastic paralysis, and no contractures. A peculiar feature was atrophy of the epidermis of the hands, forearm, feet, and legs. Death occurred in 1887 from pneumonia. Nightly suffering had been in this case relieved by paraldehyde during six months.

Case III. was a man of fifty-three years, a German, addicted to drinking and smoking in excess. The disease had existed for seven years and glycosuria was present. The weight, which had been three hundred and twenty pounds, had been reduced, but not below two hundred and eighty pounds. Œdema of the legs had been present in this case for six months. Paraldehyde in a dose of thirty grains at bedtime gave a good night's rest.

Case IV., a German, aged sixty-three years, was a market dealer, presenting as causes for his illness exposure to rheumatic influences connected with his business, and sexual excess. The right hand had been first affected, and in the course of the following year the arm and shoulder. The right leg had been seized during the last six months. There was paræsthesia but no neuralgia in this case.

Case V. was a German, aged seventy-two years, whose father and two brothers also suffered from the disease. The left upper and lower extremities only were affected, thus differing from the usual hemiplegic form, which affects the right side. It was to be remarked, however, that this patient was left-handed. The shaking was violent in this case. The patient was easily excited, and suffered with vertigo and headache.

DR. C. L. DANA felt that the obscure points of pathology and treatment should receive consideration. We do not know the nature of the disease nor how to cure it. It was his opinion that paralysis agitans is a degenerative disorder of the voluntary motor system. The sensory symptoms and the mental inquietude are explained by the close relations between the motor and sensory centres. The speaker had had twenty cases under his own observation and had seen thirteen others in the Bellevue out-door department. 2 had been between thirty and forty years of age; 5 between forty and fifty; 13 between fifty and sixty; 9 between sixty and seventy, and 4 between seventy and eighty. Of 31, 20 had been males and 11 females. Of 34 in whom the race had been mentioned, 26 had been Irish; 6 German; 1 Russian, and 1 born in the United States. The Celtic element had thus greatly preponderated, a fact not entirely explained by the large percentage of Irish attendants at this dispensary. The disease seemed increasing in frequency. From 1876 to 1879 the Bellevue dispensary had presented but 7 cases of paralysis agitans in a total of 2300 cases; while from 1885 to 1888, 11 were recorded out of a total of 2200.

He could corroborate the statement that rheumatic influences are active in its production. He too had had a case complicated with diabetes, and he had had 4 cases in which the head had been affected. He thought this not uncommon. It might be shown in the muscles of the angles of the mouth and tongue. In treatment, hyoscyamine had given the best results. He had used, however, not the amorphous but the crystalline form in $\frac{1}{100}$ to $\frac{1}{60}$ grain doses. Given thus, it had never failed to exert a palliative action.

DR. M. A. STARR called attention to a monograph upon paralysis agitans, by Anton Heimann, published in Berlin six weeks ago, and only last week received here, in which the theory of cortical origin referred to by Dr. Dana was supported by the report of a case. In this case, which had developed under the writer's observation, the four limbs were affected. The lesion could be located as hemorrhage into the internal capsule. Coincidently the paralysis agitans had ceased upon the hemiplegic side. The inference was that the paralysis agitans was due to impulses from the cortex through the internal capsule, and that the irritated cortical centres were cut off from the muscles by the injury. Gowers had demonstrated, too, that the rate of vibration in paralysis agitans was 8 per second. It is known that irritation of the cortex, of a moderate degree, in monkeys, produced tremor of the muscles characterized by 8 vibrations per second.

In regard to the extension of the tremor to the head: while Charcot had stated that the head never was affected, the majority of German observers among whom were Seeligmüller, Strumpell, and Heimann, added to Gowers, in his new book, had found the head affected in a considerable proportion of cases. The speaker had had 7 cases of paralysis agitans under his care during the last two years. The tremor had affected the head in two of these cases. He could join Dr. Dana in his endorsement of hyoscyamine, given in the crystalline form and $\frac{1}{100}$ grain doses. This remedy had had a good effect in all of the cases which he had seen.

DR. L. C. GRAY considered the origin of the tremor very obscure. He recalled a case presenting the typical symptoms of disseminated sclerosis. The patient was under observation in the hospital for a year and a half, and the post-mortem showed nothing but a cortical meningitis, no lesion in the brain or cord. The speaker did not agree with Dr. Weber that the diagnosis between paralysis agitans and disseminated sclerosis was in all cases easy to make. Voluntary tremor might be present in both, and in the earlier stages diagnosis might be impossible. One of the most typical cases which he had known had had movements of the head. This case was that of a woman of seventy-five years, who had had paralysis agitans for thirty years. It had started one day, when on a ferry-boat, upon seeing a baby fall into the water, and buoyed up by its long clothes float down the stream. Upon getting home she had found her upper lip quivering like that of a rabbit. This had been the commencement of a widespread affection.

DR. GRAEME HAMMOND had seen three or four typical cases of face tremor. In a case of which he had the brain, the paralysis agitans had been present for eight years. There had been no change in the voice, but during the last year there had been paralysis of the tongue, lips, throat, lungs, and heart, which finally

terminated life. Post-mortem there was absolutely nothing found; no softening in the medulla and no change in the cortex. A few years ago, the speaker had collected all the reports of autopsies which he could find of cases of athetosis, chorea, ataxic tremor, and paralysis agitans.

Where any lesion was found it occupied the position of the gray nerve cells of the optic thalamus, corpus striatum or cortex. Where spastic spasm was present, either combined with the tremor, or alone, the white fibres of the internal capsule were affected as well. Where spastic spasm was not present, the lesion did not affect these tracts.

DR. ROCKWELL had had two or three cases under forty years. He thought that the younger cases responded best to palliative treatment. He recalled a case from Peru which he had treated with hyoscyamine $\frac{1}{100}$ grain dose and the galvanic current. This patient had returned to his home apparently cured. The symptoms returned, he came back, was again subjected to the treatment, was again cured and had remained well for a year.

DR. SACHS regarded Dr. Heiman's argument as ingenious but not conclusive. Hemorrhage into the internal capsule is the commonest cause of hemiplegia in middle life. Hemiplegia is not very uncommon in the course of paralysis agitans and it does not interfere with the tremor in the usual case. In regard to the involvement of the head, he had a case now under treatment in which the head was affected. He used hyoscyamine in the crystalline form, and had found it so reliable as a palliative that no other drug was required in his experience. Even in severe cases the tremor was lessened by means of it.

DR. PETERSEN referred to the fact that when in the Poughkeepsie Asylum while administering the hydrobromate of hyoscyamus for headache he had incidentally relieved the tremor of paralysis agitans.

DR. WEBER thought that Charcot's rule for the involvement of the head would be found in the main correct. General shaking would move the head, but tremor of the intrinsic muscles he thought rare. In regard to Dr. Rockwell's case, he would hesitate about pronouncing a cure. Paralysis not unfrequently presented intermissions of a year or two but would ultimately return. In regard to the hyoscyamine, he had tried it some years ago; possibly the quality had not been as good as that now obtained. He would again give it a trial in the crystalline form.

CORRESPONDENCE.

EXSECTION OF EXTRAUTERINE PREGNANT CYSTS.

To the Editor of THE MEDICAL NEWS,

SIR: I notice that in your leading article of March 24th you say: "Mr. Tait denies that a diagnosis can be made prior to rupture, which may be correct so far as his personal observation has extended." Permit me to correct this, it is not what I have said, it is only what I am made to say by a well-known American writer on the subject, who appears to delight in misrepresenting me. What I do say is, what Campbell and Parry, and many others have said, that extrauterine pregnancy can rarely be diagnosed before the period of rupture, because we rarely see the cases before that time. The patients have so few symptoms that they do not seek assistance. I have now seen nearly seventy cases, and have seen only one before the period of rupture. The patient had no symptoms which indicated pregnancy, but I diagnosed occlusion and distention of a tube, and I advised its removal. In three days it burst, and the bursting I diagnosed, but as a case of burst pyosalpinx, I only discovered the differential mistake at the operation.

I am, etc.,

LAWSON TAIT.

BIRMINGHAM, May 1, 1888.

OLIVE OIL IN THE TREATMENT OF GALL-STONES.

To the Editor of THE MEDICAL NEWS,

SIR: In reading the article on "Gall-Stones or Soap?" in your issue of May 12, 1888, one is struck by the fact that the patients were relieved of pain in the cases treated by Dr. D. W. Prentiss, as was also the case with those mentioned in the article by Dr. Thomas W. Streets, U. S. N.

A few weeks ago I was called to see an officer who was laboring under an attack of hepatic colic, and who is subject to such attacks; remembering my friend, Dr. Streets' report, I gave a tumbler of olive oil, and put the patient under the influence of chloroform at once. When the chloroform passed off, I gave 15 grains of bromide of sodium every three hours, and he slept comfortably, with short intervals of wakefulness, for twelve hours. During the day two more doses of olive oil were given, each containing half a tumbler of oil. The oil did not act upon his bowels, and it took a good deal of Hunyadi-Janos water to move them; no gall-stones or other concretions were found in his stools, and he made a rapid recovery.

The point I wish to call attention to is that after the first dose of oil the patient was relieved of pain, and the delirium which had existed passed away. I omitted to state that a hot water bag was kept over the seat of pain for some hours.

His former attacks were of long duration, and he then found gall-stones in his stools. Does it not seem as if the olive oil has some specific action in these cases?

Yours truly,

A. A. HOEHLING.

U. S. NAVAL HOSPITAL, WASHINGTON, D. C.,
May 18, 1888.

NEWS ITEMS.

Are Permanent Solutions of Bichloride of Mercury a Necessity?—The *American Druggist* for March, 1888, writes that, in connection with the answer to a query, relating to the stability of solutions of corrosive sublimate intended for antiseptic purposes, it seems fair to say that there may be good reason to doubt whether it is desirable to render the solution permanent. It is not improbable that the efficacy of this preparation consists very largely in the nascent chlorine liberated during the conversion of the bichloride into calomel; and while, from a pharmaceutical point of view, it may be more satisfactory to have a solution which does not deposit the calomel, therapeutically such a solution may be the least desirable.

An Analysis of Preparations for Bleaching Hair.—The *American Analyst* of March 1, 1888, reports that recent analyses have shown that of the preparations for bleaching the hair to "the delicate golden shade so much admired by the court circles of Europe, and the best society of the United States," to quote from a label on one of the bottles, all depend for their action upon the decolorizing and corrosive influence of nascent oxygen or nascent chlorine. The bases used in the various nostrums for this purpose are peroxide of hydrogen, aqua regia, and bronzer's acid. Peroxide of hydrogen is the mildest and most innocuous of the trio named. It is a colorless liquid which destroys the natural color of the hair, and which, if used long enough, turns it an unnatural grayish-white. It is rather expensive, and is, therefore, used much less than the two other acids. It produces sores upon the scalp, and gives rise to skin complaints that resemble tetter, salt-rheum, and scald-head. The two acids are equally vile. They attack and eat the hair and skin alike. The former they partly bleach and partly burn to a handsome gold color; the latter they stain to about the same hue as does a light application of iodine. Besides the dermatologic troubles named, they cause maladies hardly distinguishable from eczema and erythema. One curious disease that they cause is an inflammation of the cells of the hair follicles. The cellular walls break down and lymph, and often blood is extravasated in appreciable quantities. All three bases produce falling out of the hair and premature baldness.

The Suppression of Quack Medicines in Germany.—Kultusminister von Gossler recently announced his intention of securing the coöperation of the Imperial Government in suppressing all advertisements of secret remedies throughout the German States.

Honors to von Brücke.—The Emperor of Austria has conferred on Hofrath Professor E. Brücke, Professor of Physiology in the University of Vienna, the Order of the "Ehrenzeichen für Kunst und Wissenschaft." This distinction was created by the Emperor last year, and has hitherto, as far as medical men are concerned, been conferred only on Hyrtl.

The Decrease in the Prices of Drugs.—The following figures are taken from an old price-book of one of the leading drug stores in this city, and show the great decrease in price of many medicines in recent years: Acid hydrocyanic, 25 cents a drachm; acid succinic, $300 an ounce; alcohol, 25 cents a pint; brucine, $50 an ounce; delphine, $80 an ounce; emetine, $36 an ounce; linium usitatissinium, 17 cents a pound; morphine, $50 an ounce; narcotine, $100 an ounce; sulphas cinchonæ, $10 an ounce; sulphas quininæ, $1.50 a drachm; hatcase (oiled silk), $1.50 a yard; Prussian blue, 25 cents an ounce. Tinctures were 6 or 12 cents an ounce; ointments, 12 cents an ounce; and syrups, 6 cents an ounce by weight, or 8 cents by measure.—*Popular Science News*, April, 1888.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM MAY 15 TO MAY 21, 1888.

TOWN, F. L., *Major and Surgeon* (U. S. Army).—Post Surgeon at the Post of San Antonio, Texas, will take charge of the office of the Medical Director at these Headquarters, and perform the duties of that officer during his absence on leave.—*S. O. 51, Department of Texas*, May 11, 1888.

BROWN, HARVEY E., *Major and Surgeon*.—Directed to continue on duty at Fort Barrancas, Florida, until further orders.—*S. O. 115, A. G. O.*, May 18, 1888.

WYETH, M. C., *Captain and Assistant Surgeon*.—Will be relieved from duty at Fort Barrancas, Florida, at the expiration of his present leave of absence, and will report in person to the commanding officer, Fort Huachuca, Arizona, for duty at that post.—*S. O. 115, A. G. O.*, May 18, 1888.

KNEEDLER, WILLIAM L., *First Lieutenant and Assistant Surgeon*.—Will accompany, from Fort Snelling, Minnesota, that portion of the Twenty-fifth Infantry destined for Fort Shaw, Montana Territory. From Cascade, Montana Territory, he will accompany the portion of the Third Infantry *en route* from Fort Shaw, Montana Territory, to Fort Snelling, Minnesota.—*S. O. 40, Department of Dakota*, May 14, 1888.

WOOD, LEONARD, *First Lieutenant and Assistant Surgeon*.—Leave of absence extended two months.—*S. O 114, A. G. O.*, May 17, 1888.

Par. 12, S. O. 49, Department of Texas, May 5, relative to HARRIS, H. S. T., *First Lieutenant and Assistant Surgeon*, accompanying the Eighth Cavalry to the Department of Dakota, is amended by par. 1, S. O. 50, Department of Texas, May 9, 1888.

Par. 1, S. O. 50, Department of Texas, May 9, is revoked by par. 1, S. O. 51, Department of Texas, May 11, 1888.

HARRIS, H. S. T., *First Lieutenant and Assistant Surgeon*.—Will be relieved from duty at Camp Pena Colorado, and proceed to San Antonio, where he will report to the commanding officer of the battalion of the Sixteenth Infantry, for duty as Medical Officer with that battalion to its destination to the Department of the Platte. Upon completion of this duty, he will return to his proper station, Camp Pena Colorado, Texas.—*S. O. 51, Department of Texas*, May 11, 1888.

Par. 15, S. O. 49, Department of Texas, c. s., relative to CLENDENIN, PAUL, *First Lieutenant and Assistant Surgeon*, accompanying the Sixteenth Infantry to its destination, is revoked by S. O. 51, Department of Texas, May 11, 1888.

CLENDENIN, PAUL, *First Lieutenant and Assistant Surgeon*.—Will proceed from Fort McIntosh to Fort Davis, and report to the Commanding Officer, Eighth Cavalry, for duty as Medical Officer with that regiment on its march to Fort Concho, from which place Lieutenant Clendenin will return to his proper station.—*S. O. 51, Department of Texas*, May 11, 1888.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY, FOR THE WEEK ENDING MAY 19, 1888.

KERSHNER, EDWARD, *Surgeon*.—Detached from the U. S. Steamer "Pensacola," and wait orders.

SAYRE, J. S., *Assistant Surgeon*.—Detached from the U. S. Steamer "Pensacola, and wait orders,

JONES, W. H., *Surgeon*.—Detached from the Navy Yard, League Island, and ordered to the "Pensacola."

COOKE, G. H., *Surgeon*.—Ordered to the Navy Yard, League Island.

CRAWFORD, MILLARD H., *Passed Assistant Surgeon*.—Ordered to the "Vandalia."

WIEBER, F. W. F., *Assistant Surgeon*.—Detached from the "Vandalia," and ordered home.

STONE, E. P., *Assistant Surgeon*.—Detached from the Naval Hospital, New York, and ordered to the "Pensacola."

HARMAN, G. E. H., *Passed Assistant Surgeon*.—Commissioned a Surgeon, May 12, 1888.

THE MEDICAL NEWS *will be pleased to receive early intelligence of local events of general medical interest, or of matters which it is desirable to bring to the notice of the profession.*

Local papers containing reports or news items should be marked. Letters, whether written for publication or private information, must be authenticated by the names and addresses of their writers—of course not necessarily for publication.

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